

Complete Guide to

KODAK AUTOMATIC CAMERAS



**Kodak
Automatic
35**

**Kodak
Motormatic
35**

**Kodak
Retina
Automatic
III**

**Kodak
Starmatic
II**

Joseph D. Cooper

E. J. KORVETTE

PHOTO

\$1.59

LIST 1.95

***Guide to
Kodak Automatic Cameras***

Guide to
KODAK
Automatic
Cameras

BY JOSEPH D. COOPER

UNIVERSAL PHOTO BOOKS
New York

Copyright © 1962
Universal Photo Books
New York 10, N. Y.

ALL RIGHTS RESERVED

Library of Congress
Catalog Card No. 61-14250

Manufactured in the
United States of America

P R E F A C E

The Kodak automatic cameras are available in a wide range of models to suit all budgets and tastes. Some have more features than others—again, a matter of individual preferences and costs. Even the photographer who wants to have creative freedom of manual control of the shutter and lens diaphragm can find a Kodak automatic to satisfy his interests.

What is the basic scheme of an automatic camera? You set a few controls on the camera and it takes over, when you press the shutter, to give you the correct exposure for most scenes. It's almost as simple as when box cameras were sold by Kodak with the advertising slogan "You press the shutter, we do the rest." Things were simpler then because only one or two Kodak films were available, because you took practically all pictures with the sun behind your back, and because you took pictures only during the best sunlight hours. None of this new-fangled dawn-to-dusk picture-taking or indoor photographs by available light. And they didn't have color films either.

For most amateur picture subjects, you can use your Kodak automatic camera about as easily as the old-fashioned box camera—except that you can now take pictures under a wider variety of lighting conditions and you can focus more selectively, if you desire. Even as to focusing, however, you can simplify with the automatic camera by pre-selecting a lens opening that will give you universal focus from near to far.

Even for the average picture-taker, there are certain pictures that call for individual thought. The camera won't do the thinking for you. Thus, you might be taking a portrait of a light-skinned person against a dark background. With an automatic camera, the person will be overexposed slightly because of the predominant dark mass which is averaged in by the electronic exposure meter. The book will tell you, however, how to take a spot automatic reading for the main subject in order to get correct exposure. The book will also tell you how to focus selectively for the best pictorial results. No automatic camera will do this for you.

In short, learn as much as you can about the camera to assure best results when those unusual picture subjects come along.

I am indebted to my friends at Eastman Kodak Co., Editorial Service Bureau, for their usual helpfulness, particularly Jim Baxter, Stan Holmes and Mrs. Del Commisso.

JOSEPH D. COOPER

Contents

- 1 The Kodak Automatic Cameras 9**
- 2 Operating the Kodak Automatic Cameras 19**
- 3 Taking Good Pictures 35**
- 4 Exposure Control 39**
- 5 Flash Photography 55**
- 6 Color Photography 69**
- 7 Black-and-White Photography 77**
- 8 Available-Light Photography 85**
- 9 Suggestions for Picture Subjects 103**

Index 125



A street scene made "at the corners of Dartmouth Street and Park Avenue" shows remarkable depth of field and clarity of detail. The viewfinder of the Motomatic and Automatic eliminates any chance of focusing error by indicating to the picture-taker if he is set for a "close," "group," or "scene" shot.

1

The Kodak Automatic Cameras

The picture is the thing.

With any of the Kodak automatic cameras, you can concentrate your attention on picture-taking. You need not concern yourself with camera operating techniques, nor with changes in lighting—whether the sun is or is not behind a cloud. You need not lose yourself in making lens and shutter adjustments—while your subject gets away from you.

With any of the Kodak automatic cameras, you are free to concentrate on the really important things: the expression on your subject's face, his pose, the right shooting angle to get objects in the background or foreground—or to eliminate them—and the pictorial quality of the lighting. The camera itself, once it has been set, takes over computing exposure. The Kodak automatic cameras are designed for simplicity. They are cameras for the entire family.

In this chapter, we will review the main features of the family of Kodak automatics. In the next chapter, we will cover the simple procedures for putting film into the cameras and operating them, while in succeeding chapters we cover the various techniques for picture-taking.

KODAK AUTOMATIC 35, 35B, 35F

Each of these three cameras is of essentially the same design. Each features easy drum-type film loading, the same lens-and-shutter equipment, and the same simplicity of automatic exposure control. The 35F features a built-in flashholder. Descriptions of the individual cameras follow.

Kodak Automatic 35

Film used is Kodak 135, 20- or 36-exposure magazines, black-and-white or color, negative area 24 x 36mm.

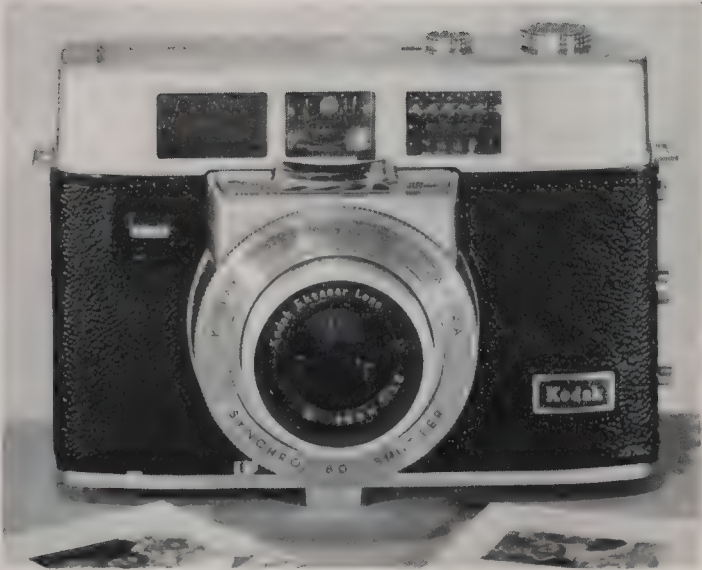
Lens is the 44mm *f*/2.8 Kodak Ektanar. Lens openings are marked in EV 8.5 through 15.5 at 1/40 sec.; 9.5 through 16.5 at 1/80 sec. The lens openings are controlled by the meter or by manual setting.

The Kodak Synchro 80 shutter is automatically set as the film is advanced after each exposure. It has speeds of 1/40 and 1/80 sec. The 1/40 sec. is for flash photography and low-level light, while the 1/80 sec. is for general picture-taking.

The built-in photoelectric exposure meter reads the over-all brightness of the picture area and controls lens openings automatically, when the camera is set for automatic exposure control. ASA film index settings may be set from ASA 10 to 160.

The camera is focused manually within a range of 2½ ft. to ∞. Convenient zone focusing scales are imprinted on the camera lens.

The viewfinder has a built-in projected view-frame to help you compose the picture. It has a built-in warning to remind you to advance the film when you have forgotten to do so. The



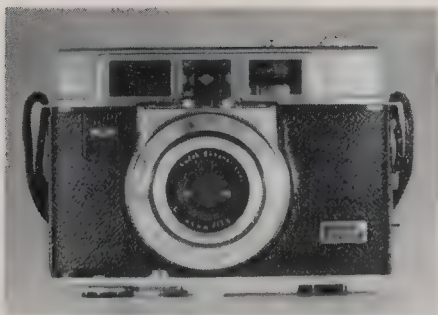
I-1. The Kodak Automatic 35 with 44mm f/2.8 Ektanar lens.

viewfinder also warns you when the camera is still on manual exposure control.

Other features include low-light level indicator, single-stroke film-advance lever, easy drum-type film loading, automatic exposure counter, automatic film leader wind-off, a tripod socket, and flash exposure cards in a frame-holder on the back of the camera.

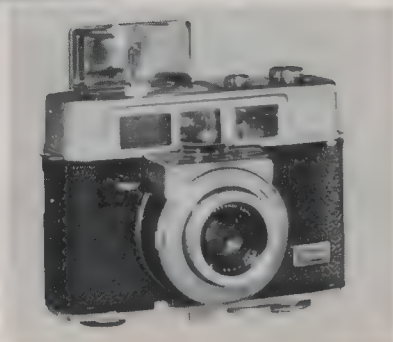
Kodak Automatic 35B

One of the chief differences between the Kodak Automatic 35B camera and the Automatic 35 is the 35B's automatic operation of the flash within a distance of 5 ft. to 23 ft. Other differences include: (1) lens openings $f/2.8$ through $f/32$ (instead of EV settings); (2) ASA settings from 10 to 320; (3)



I-2. The Kodak Automatic 35B.

I-3. The Kodak Automatic 35F.



focusing from 3 ft. to ∞ ; (4) viewfinder signals indicating "Flash" setting, low-light level, and focus zone.

Kodak Automatic 35F

The Automatic 35F is identical to the 35B with the addition of a built-in pop-up flashholder which accepts AG-1 flash bulbs. It uses two N-size alkaline manganese batteries. There is an alternate flash outlet for a European-type connector which can be used when the built-in flashholder is not in use.

KODAK MOTORMATIC 35, 35F

The Motormatic cameras differ from the Automatic 35's, described above, in two major aspects: first, they contain a

built-in power-drive which enables you to take as many as ten pictures in rapid sequence; second, they feature a faster shutter which lets you take action pictures. Otherwise, these cameras feature the same rugged simplicity of operation as the Automatic 35's.

Kodak Motormatic 35

Uses Kodak film 135, 20- or 36-exposure magazines, black-and-white or color, producing an image size of 24 x 36mm. The lens is the 44mm *f*/2.8 Kodak Ektanar with lens openings *f*/2.8 through *f* 32. Focusing is from 3 ft. to ∞ . Click-stops on the focusing scale are for close-ups, groups, and scenes, with visual reminders of these zone-focusing stops in the viewfinder.

Shutter speeds are 1/40, 1/80, 1/125, and 1/250. Flash synchronization is at 1/40 with flash bulbs and at any speed with electronic flash. The synchronization is automatic from 5 to 25 ft. with guide numbers 35 to 340.



1-4. The Kodak Motormatic 35 with Kodak 44mm *f*/2.8 Ektanar lens.

Exposure control for prevailing light is automatic, with ASA settings of 10 to 800. The camera has provision for manual operation.

A spring motor advances the film, permitting 10 exposures per wind-up. Individual exposures may also be made without automatic advance.

The viewfinder has a built-in projected view frame with parallax mark at 4 ft. Other signals indicate manual setting, low-light level, and zone-minder.

Other features include automatic film leader wind-off and automatic film counter return. A holder-frame on the back of the camera contains exposure data cards.

Kodak Motomatic 35F

This camera is generally similar to the Motomatic 35 except for the important addition of a built-in pop-up flashholder. It accepts AG-1-type flash bulbs and operates from guide numbers 20 to 200. It uses two N-size alkaline manganese batteries. The camera has an alternate flash outlet with a European-type connector, for use when the built-in flashholder is not operated.



I-5. The Kodak Motomatic 35F.

KODAK RETINA AUTOMATIC III

The Kodak Retina Automatic III camera offers the finest features for the most discriminating photographer. It is of an entirely different design from the Kodak Automatic 35's and the Kodak Motomatic 35's. While there are differences in camera features throughout, the most obvious difference is in the inclusion of a coupled rangefinder which takes all the guesswork out of focusing. Like the cameras described above, it uses Kodak 135 film, 20- or 36-exposure magazines, black-and-white or color, producing an image frame of 24mm x 36mm.

The lens is the 45mm $f/2.8$ Retina Xenar. It has lens openings of $f/2.8$ through $f/22$. The Compur shutter has speeds of $1/30$ through $1/500$ and "B".

Synchronization of flash bulbs is at $1/30$ sec., while electronic flash may be synchronized at all speeds. A European-



I-6. The Kodak Retina Automatic III with 45mm $f/2.8$ Retina Xenar lens.

type flash connector permits use of any flashholder with a suitable connector cord tip or the use of the Kodak Retina Flash Bracket in conjunction with any Kodak flashholder.

The coupled rangefinder is of the superimposed-image type combined with the viewfinder. The viewfinder incorporates a projected view-frame. Focusing is in the range of $3\frac{1}{2}$ ft. to ∞ . For quick, manual operation, the camera offers zone-focusing of "groups" and "scenes."

Other features include double exposure prevention, rapid-wind lever which advances the film and sets the shutter with one stroke, and a tripod socket. A complete line of specialized photo aids, making up the Retina system, extends the picture-taking scope of this camera.

BROWNIE STARMATIC II

The Kodak Brownie Starmatic II is a simplified camera for family picture-taking. It is suitable for most outdoor picture-taking as well as for flash photography. Using Kodak 127 roll-film, black-and-white or color, it produces 12 exposures per

I-7. The Kodak Starmatic II with 44mm f/8 Kodar lens.



roll, $1\frac{5}{8}$ x $1\frac{5}{8}$ inches. These are usually printed as standard enlarged color or black-and-white pictures, size $3\frac{1}{2}$ x $3\frac{1}{2}$ inches. Color transparencies may be made in the super-slide size, 2 x 2 inches.

The lens is the 44mm Kodar $f/8$. It has three elements and is of fixed-focus design. Hence, no adjustments need be made for distance.

Exposure control offers a choice of automatic, with a signal indicating insufficient light for proper exposure, and manual, with five lens openings, EV 12 through 16. The camera is synchronized for flash. It has double exposure prevention. The optical, eye-level viewfinder has a built-in signal indicating manual setting, as a warning if you should prefer automatic control.

The camera accepts either the Kodalite Midget or Kodak Super-Mite flashholders.



A very busy young lady caught unawares as she scoops up gravel from the driveway. The subject is in shadow right next to bright sunshine, but the automatic exposure control strikes a balance that insures detail in both areas.

2

Operating the Kodak Automatic Cameras

In this chapter, instructions are included for loading film and removing it from the camera, as well as making the initial adjustments in the camera up to the point of taking the first picture.

LOADING AND UNLOADING FILM

Film loading and unloading procedures are essentially the same in all of the Kodak Automatic 35's and Motormatic 35's. There are some slight differences in the case of the Kodak Retina Automatic III, which has a different body design. Of course, the procedures for loading the Kodak Brownie' Star-matic II are quite individual, inasmuch as different film is used in an entirely different kind of camera.

Kodak Automatic 35

Film-loading procedures for the Kodak Automatic 35's are depicted in Figures 2-1 through 6, to which the following steps correspond:

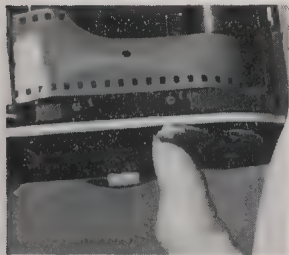
1. Open the back by pushing the latch button upward.
2. Push out the rewind knob.
3. Insert the film magazine in the recess next to the knob. Push the rewind knob all the way in, turning it slightly if necessary.
4. Swing out the rapid-wind lever until the opening in the take-up drum is up.
5. Insert the end of the film into the opening in the take-up drum. Swing out the rapid-wind lever until the pins on the take-up drum engage the film perforations and the film is wound half-way around the drum. Close the back and make sure that it is latched.
6. Swing out the rapid-wind lever until the mechanism locks. This takes several full strokes of the lever. The first frame of film will then be in position and the exposure counter will be automatically set at "1." The counter will move a mark each time the film is advanced. It will show the number of exposures made. *Note:* Neither the exposure counter nor the shutter release will operate unless the film for exposure "1" is in position.

The Motomatic 35's are loaded in generally the same way. Steps 1 through 3, shown in Figures 2-1 through 3, are identical. Steps 4 through 6 are a little different because the Motomatic 35's use a large wind-up knob instead of a rapid-advance lever.

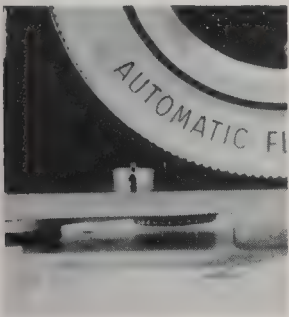
1. Same as above.
2. Same as above.
3. Same as above.
4. Turn the large, knurled wind-up knob on the bottom of the camera until the opening in the take-up drum is facing upward (Figure 2-7).



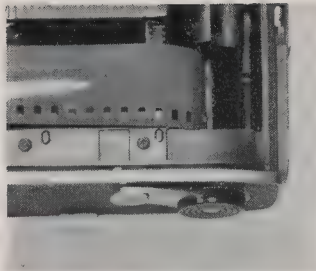
II-1. Open back by pushing latch button up.



II-2. Push rewind knob up.



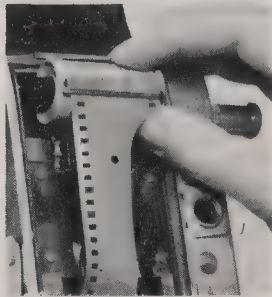
II-3. Insert film magazine in recess next to knob, then push rewind knob all the way in, turning slightly to make it fit.



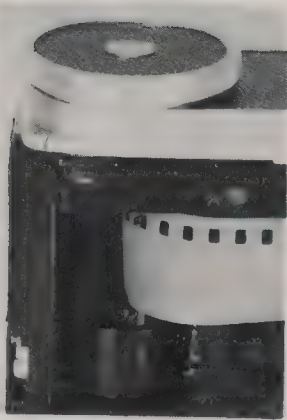
II-4. Swing out rapid wind lever until opening in take-up drum is up.



II-5. Insert film end into opening of take-up drum. Swing out rapid wind lever until pins on take-up drum engage film perforations and film is wound around drum.



II-6. Swing rapid wind lever until mechanism locks. First frame will be in place and exposure counter will be set at 1.

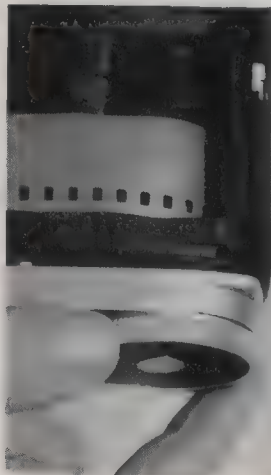


11-7. Turn large, knurled windup knob on bottom of camera until opening in take-up drum faces upward. Insert film end into drum opening and hook a perforation over the pin at edge of opening.

5. Insert the end of the film into the drum opening and hook a perforation over the pin. Turn the wind-up knob until both pins engage film perforations and the film is wound half-way around the drum. Close the camera back; be sure it is latched (Figure 2-8).

6. Turn the large, knurled wind-up knob as many times as necessary until the mechanism locks. One full wind-up provides

11-8. Turn windup knob until second pin also engages film perforations and film is wound halfway around the drum.



11-9. After closing camera back, turn large, knurled windup knob as many times as necessary until mechanism locks. One full windup provides power for advancing approximately 10 frames of film.



power for advancing approximately 10 frames of film. During the wind-up, the first two full turns bring the first frame of film into position and the exposure counter to "1," at which point a resistance is felt. Continue to turn the wind-up knob to a stop (approximately $5\frac{1}{2}$ full turns) to wind the spring motor. The film advances automatically and the counter moves a mark each time the shutter is released. The counter shows the number of exposures made.

Unloading should always be done in subdued light. After the twentieth or thirty-sixth exposure, *and before the back is opened*, rewind the film promptly. Pull the rewind knob (Figure 2-10) until you feel resistance (about $\frac{3}{8}$ inch). The film will not rewind if the knob is pulled out too far. In that case, push in the knob completely and withdraw it again about $\frac{3}{8}$ inch.

Now, draw the rewind release in the lower left corner of the camera in its slot as far as it will go in the direction of the arrow. This releases internal tension and permits the rewind knob to be turned clockwise to wind the film toward the magazine. Hold the release while rewinding. The film is completely rewound, with the Kodak Automatic 35's, when the signal window remains either red or black. With the Motormatic 35's,



II-10. To rewind film, pull out the rewind knob until slight resistance is felt.

the film is completely rewound when the dial of the exposure counter ceases to advance or vibrate as the rewind knob is turned.

In the case of the Motormatic 35's, always rewind the film immediately after taking the last exposure on the roll. In some magazines, film is attached by means of a gummed tape which may separate from the magazine spool under the continued tension of the spring motor. Immediate rewinding prevents this.

Kodak Retina Automatic III

The procedure for loading the Kodak Retina Automatic III is generally the same as for the Kodak Automatic 35's. But this camera does not have the same kind of take-up drum. It has a somewhat smaller take-up spool to which the film is engaged in much the same way as with the Automatic 35's.

The film counter must be set manually. To do so, depress fully and hold down the film release button (within the curved guard next to the counter window). At the same time, slide the film counter advance (the button next to the viewfinder window) in the direction of the arrow as many times as necessary to bring the diamond-shaped mark near 36 on the film counter opposite the notch, when using a 36-exposure magazine. With

a 20-exposure magazine, set to the diamond-shaped mark between 20 and 25. Now, press and release the film release button. Then, swing out and fully release the rapid-wind lever. Do this two more times to bring the film counter to 36 or 20, respectively. The counter indicates the exposures that are remaining.

Brownie Starmatic II

Procedures for loading the Brownie Starmatic II are shown in Figures 2-11 through 2-16.

1. Push the lever on the bottom of the camera to open. Then, withdraw the film-holder from the camera.

2. The empty spool should be over the wind knob. If the end of the spool does not engage the wind knob, turn the wind knob.

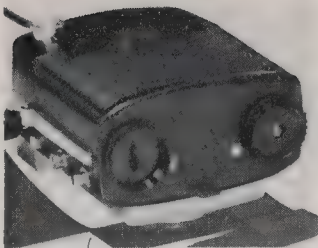
3. Place the end of the full film spool in the fork of the spring pointed out by the word *Load* on the film-holder. Push up against the spring. Then, swing the other end of the spool in and let it snap into the hole.

4. Break the film seal and then draw the paper, colored side out, over the large opening in the film-holder marked *Film This Side*. Thread the end of the paper evenly into the slot of the empty spool. Turn the wind knob two full turns and at the same time apply slight pressure on the paper to be certain it is wound on the spool straight and tight.

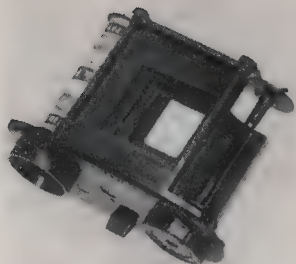
5. Replace the film-holder. Make sure it is all the way in. Lock it in place by moving the lever all the way to *Lock*.

6. Look into the red window on the camera back. Wind the film until the warning arrow appears. Then, slowly wind until the "1" is centered in the window. The film name precedes each of the 12 numbers.

After the twelfth snapshot, in subdued light, wind the film until the end of the paper passes the window and is completely wound up on the take-up spool. Open the camera once more, as in paragraph 1, above. Withdraw the roll holder, grasp the end



11-11. Push lever on bottom of camera to open.



11-14. Push up against spring lightly; then swing other end of spool in and let it snap into hole.



11-12. Withdraw film holder from camera.



11-15. Break sealing band on roll of film; then draw paper, colored side out, over the large opening in film holder marked THIS SIDE OUT. Thread end of paper evenly into slot of empty spool.



11-13. Place end of full film spool in front of spring pointed out by word LOAD on film holder.



11-16. Turn wind knob two full turns and apply slight pressure on paper to be sure it is wound straight and tight on spool.

of the film spool near the forked spring, and swing the film out. Fold the end of the paper under. Seal it with the paper sticker. Do not leave the exposed film in bright light. Always have the film developed as soon as possible.

Move the empty spool to the wind side of the roll holder so that it will be ready for reloading.

SETTING THE CAMERA

When the film has been loaded, the next steps are to prepare the camera for picture-taking. This includes:

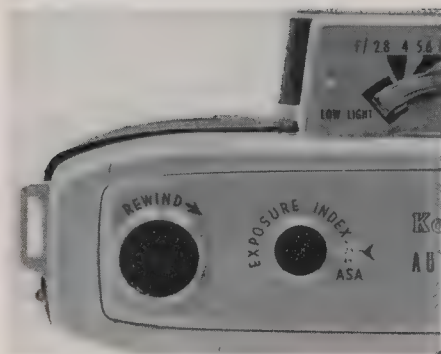
1. Setting the film speed rating (also called "exposure index").
2. Setting the camera on AUTOMATIC or MANUAL, as you prefer, as appropriate for your camera.
3. Setting the shutter speed.

Automatic 35, 35B, 35F

Set the film speed rating in the ASA window (on top of the camera) by turning the knob until the proper film speed appears opposite the arrow. The film speeds for Kodak No. 135 Films can be found on the two-sided Exposure Data Card (under the heading ASA). They are also given in the instructions packed with the film. For example, the film speed of Kodachrome II film for daylight is 25; Plus-X is 160.

AUTOMATIC operation, with the *Automatic 35*, look into the curved window on top of the shutter housing, and note the position of the green pointer. If it points at AUTOMATIC, the camera is set for automatic exposure control. If the green pointer is not at AUTOMATIC, simply move the knurled wheel (under the viewfinder eyepiece) to the right until the pointer locks at the automatic position at the end of the window. Set the shutter at 80 (1/80) for daylight pictures. /

With the *Automatic 35B and 35F*, to set the AUTOMATIC control depress the selector ring lock and, at the same time,



11-17. With Automatic 35's set exposure index by turning small knob until proper ASA number appears in window.

revolve the ring clockwise to snap-lock the green daylight arrow opposite the green triangular index mark. This automatically selects a shutter speed of 1/80 second.

Motomatic 35, 35F

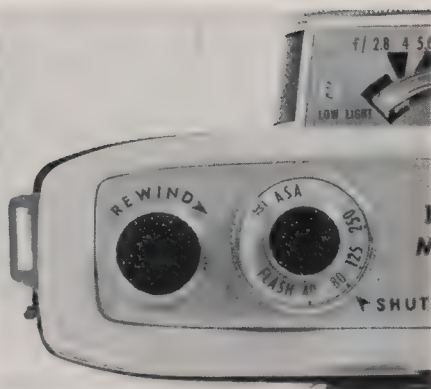
Set the film speed rating in the ASA window (on top of the camera) by depressing the lock button and rotating the knurled speed ring until the film speed number appears. Release the button. The film speeds for Kodak No. 135 films can be found on the cards in the frame in back of the camera or in the film instructions. For example, the film speed of Kodachrome II Daylight is 25; Plus-X is 160.

To set the Motomatic 35 at AUTOMATIC, move the knurled wheel (under the viewfinder eyepiece) to the right until the green pointer locks at AUTOMATIC. Then, set the selector ring (around lens) to Daylight. To do so, press the ring lock and turn the ring clockwise until the Daylight arrow appears at the index mark.

To set the Motomatic 35F at AUTOMATIC, merely set the selector ring at Daylight, as just described.

All four shutter speeds of the Motomatic can be used: 1/40, 1/80, 1/125, and 1/250. The ordinary daylight setting will be

11-18. With Motormatic 35's depress lock button and turn knurled speed ring until ASA number appears in place.



1 80. To select a shutter speed, rotate the knurled speed ring (without pressing the center lock button) until the desired shutter speed is opposite the shutter speed index mark. Do not make intermediate shutter settings.

Note: If you cannot set a desired ASA number or shutter speed, you may need to use a different shutter speed to permit the setting of the ASA number. This is part of the automatic control to assure compatibility of the two settings.

Kodak Retina Automatic III

To set the camera for automatic exposure control, rotate the knurled lens opening ring until the red A clicks into position opposite the black index mark.

To set the film speed (found in the film instruction sheet), press the speed ringlock down firmly and rotate the knurled speed ring until the orange index dot on the ring clicks into position opposite the film speed number of the film. Some of the many settings available are at intermediate points.

A shutter speed of 1/60 or 1/125 is recommended for general daylight use. Rotate the knurled shutter speed ring until the desired shutter speed is opposite the A and the index mark. Intermediate settings can be made.

DISTANCE SETTINGS

For each picture, the distance setting must be checked and, if necessary, adjusted. A series of pictures at the same distance can be made without further adjustment. Setting the distance is called *focusing*. If the camera is not focused properly, the picture may be blurred or "out of focus."

With the exception of the Kodak Retina Automatic III, distance settings are estimated. The slight variations are described below.

The Zone Focus System

The focusing range of your camera (other than Starmatic) is divided into convenient subject zones marked on the lens mount. When you turn the lens to one of these markings, you are assured that you will have a sharp picture. In effect, it is the width of the subject area which automatically governs the distance setting.

Your camera (except the Retina Automatic) has three markings: *Closeups*, *Groups*, and *Scenes*. On the Automatic 35, these words are engraved on the lens mount, together with diamond markers. On the other cameras, the words are absent, but the diamonds are there, together with click stops to help position the lens, as follows:

1. Near 4 ft. is the setting for CLOSE.
2. Between 8 and 10 ft. is the setting for GROUPS.
3. Between 25 and 50 ft. is the SCENE setting.

A "Zone Minder," built into the viewfinder, shows at a glance which of the three zones is set on the focusing scale. You can set the zone focus by rotating the lens mount while looking through the viewfinder, if you prefer. You can also do so by watching the lens mount click into position as you rotate it.

The range of sharpness, which permits these zone settings, depends on the lens opening (*f* number or EV number) as

11-19. Viewfinders of Kodak Automatic and Motomatic 35's have zone minders which indicate the zone focused on, a flash symbol when camera is set for flash instead of daylight and luminous frames with parallax markings at top.



shown by the red exposure needle. The higher the number, the greater the range of sharpness.

Note that at f /numbers below $f/5.6$, the zone of sharpness is narrowed considerably. Careful scale focusing is advised. You must pace off or otherwise estimate carefully the camera-to-subject distance and set it by rotating the lens mount until that distance number appears opposite the index mark.

Kodak Retina Automatic III

With the Retina Automatic III, you have a choice of three distance-setting or focusing methods: rangefinder focusing, scale focusing, and zone focusing.

Rangefinder focusing. As you look through the eyepiece of the viewfinder, you will notice a circular area in the center. Until the camera is focused for the correct camera-to-subject distance of the object in that circular area, you will see a double image there. To set the distance correctly, rotate the lens mount by its handle or its knurled rim until the outlines of the double image move together and coincide, so that only one image is visible. The lens is now properly focused. The distance in feet will appear on the lens mount opposite the index mark.

Scale focusing. You can also focus by estimating the distance and turning the lens mount until the subject distance is opposite the solid black focusing index.

Zone focusing. The black dot near 10 on the focusing scale is the quick setting for Groups. The red dot near 30 is the quick setting for Scenes.

Zone of sharpness. After you have properly focused on your subject, it will be sharp in the picture. Other objects in the picture, in front of and behind the subject, will also be sharp. The extent or depth of this zone of sharpness is called depth of field. The larger the f /number, the greater the depth of field at the same distance setting. A depth-of-field scale, composed of numbers corresponding to lens openings, is engraved on either side of the focusing index. The two triangular indexes, one on each side of the focusing index, indicate the depth of field at $f/4$. The dots on either side of these triangles indicate the depth at $f/2.8$ and $f/5.6$ respectively.

To use the scale, take this example: set the focus at 10 feet and assume a lens opening of $f/8$; the depth of field is from about 7 ft. to about 25 ft. These distances were found by noting the distance figures (on lens mount) opposite the two figures 8, on either side of the focusing index. At $f/4$ the depth of field extends from about 8 ft. to 15 ft. Read the depth of field for other lens openings similarly.

THE FILM ADVANCE

Rapid Wind Lever

The film is advanced before or after each exposure by working the rapid wind lever on the base of the camera (except for the Motormatic, described below). Swing out the rapid wind lever one full stroke or several short ones until it locks. Then, let the lever return to its original position. This advances the film and the film counter and also sets the shutter simultaneously. Double exposure is prevented.

Motormatic Film Advance

When the Motormatic windup knob, at the base of the camera, is fully wound, it permits 10 pictures to be made in sequence or at different times without further action except to press the shutter release each time. To take individual pictures or to avoid the sound of the spring motor under certain quiet conditions, you can follow the procedure given below.

If the spring motor has been wound for a series of pictures, push the rewind release to the other end of its slot to release the spring tension. The shutter is now set and ready for one exposure. After this exposure, *slowly* and carefully, turn the windup knob (about $\frac{1}{2}$ turn) until a "click" is heard and a slight resistance is felt. At this point one frame of film has been advanced and one more exposure can be made. Repeat this procedure as often as desired.



The camera used to take this scenic shot was set for a correct exposure of the snow-clad peaks, which made the foreground trees and figure completely underexposed, causing them to appear as silhouettes.

3

Taking Good Pictures

Your camera has film in it, the proper settings have been made, and you are ready for your first picture. Will it be a good one? If you follow the instructions given in the preceding chapter, you should obtain a picture that is properly exposed and sharply focused. What else is there to good picture taking?

Simple as they may seem, two of the most important keys to taking a good picture are the holding of the camera and the tripping of the shutter release. Mastery of these two will make the difference, quite often, between a picture that is crisp and sharp and one which is blurred and fuzzy.

HOLDING THE CAMERA

The illustrations show two methods of holding the camera. Select one that is appropriate for the subject matter. The *horizontal position* is usually best for most scenes, when you want to get as wide coverage as possible. It is also used for



III-1. Correct position for holding a Kodak Automatic 35mm camera for vertical picture-taking.



III-2. Correct position for holding a Kodak automatic 35mm camera for horizontal picture-taking.

large groups as well as for close-ups of small groups, particularly where head and shoulders are to be shown. Pictorially, it is a more relaxed format. Rest the camera in the palms of the hands, and hold it close to the forehead for additional support, with the right index finger crooked over the shutter release.

The *vertical position* is best for individual portraits, whether close-up or full length. It is best for certain scenes where tall objects are to be photographed. Pictorially, it gives a more formal effect. Hold the camera with one end or the other—whichever is most comfortable for you—in a downward position. In one position you would rest your right index finger on the shutter release button. In the other, you would use your thumb.

Be careful not to obstruct any part of the camera, but particularly the lens and the honeycomb cells of the exposure control. Obstruction of the latter would give you an incorrect exposure.

Do not point the camera toward any bright light source, especially the sun. The direct rays of light would have too much effect on the exposure control, while other objects would be underexposed.

Stand with your legs slightly apart, with one somewhat forward. This helps steady your body. Remember that body sway and vibrations can cause camera movement at the moment of exposure. If you feel unsteady, use any convenient support. Lean against a wall, a tree, a fence or the back of a chair. Sit, if you can. Rest your elbows on a table or other solid support.

TAKING THE PICTURE

Hold the camera close to the eye so that you can see the complete luminous view-frame. Whatever you see within the frame area (except at close distances) will be what you get on the film.

Close-Up Adjustments

At close distances some of the area shown in the viewfinder will not be photographed. To correct for this, "parallax lines" show you the new top edge of the picture when held horizontally for given distances as noted below:

1. *Automatic 35*: 5 pointer at upper left indicates the upper edge when the subject is 5 ft. from the camera. 3 pointer at the upper right indicates the upper edge when subject is 3 ft. from the camera.

2. *Automatic 35B, 35F, Motormatics*: Pointer at upper right shows upper edge when subject is 4 ft. from the camera.

3. *Retina Automatic III*: Two pointers indicate upper edge when subject is $3\frac{1}{2}$ ft. from the camera. Remember that an equivalent area is added to the bottom of the view-frame.

Also seen in the viewfinder are other signals which assist in picture taking. The zone-minder signals were discussed in the preceding chapter. Flash signals will be discussed in the chapter on that subject.

Low Level Light Indicator

When there is insufficient available light to take a picture at the selected shutter speed a signal will appear in the lower left corner of the viewfinder window.

At the same time, the red exposure meter needle will have moved into the red, low-light level area at the extreme left of the curved exposure control window (except for the Retina Automatic III).

Shutter Release

Hold the camera steady with your finger poised on the shutter release. Press the shutter release down all the way with a slow, squeezing motion. Do not press down sharply or quickly, for this may jar the camera enough to cause unsharpness in the negative.

If you cannot press the release down, this is a signal to you that the film has not been advanced. Swing the rapid wind lever out fully, or wind the Motoromatic windup knob, as the case may be.

4

Exposure Control

This chapter has to do with taking pictures in ordinary daylight or under other lighting conditions where you do not use flash.

The Kodak automatic cameras require no adjustments or changes for most picture-taking. Once the film has been loaded and the initial adjustments made, nothing else need be done other than to sight the camera, release the shutter, and wind the film for the next exposure. It's just that easy.

There are a few differences among the different Kodak automatic cameras which we will describe in this chapter. Also, we will cover picture-taking under special conditions when the automatic controls might not be suitable.

THE MAIN INGREDIENTS OF EXPOSURE

Three things will determine how much exposure you give a subject through the setting of the shutter and lens diaphragm. There are the sensitivity of the film, quality of the light falling

on the subject, and reflectance qualities of the subject itself. These will be explained briefly below.

Sensitivity of the Film

The sensitivity of the film is indicated by the letters ASA. ASA is an abbreviation for American Standards Association. The ASA number gives you a basis of comparing the sensitivity of one film with another. Thus, a film with a rating of ASA 50 is twice as fast as one with a rating of ASA 25.

Black-and-white film has more latitude than color film. The term "latitude" refers to the extent to which you can deviate from an ideal exposure, plus or minus, and still get a good, reproducible negative. Ordinarily, the latitude of the film is exploited on the side of underexposure because a slightly thin negative is more suited to enlarging. Overexposure is to be avoided because denser images produce graininess.

Color films have much less latitude for either overexposure or underexposure. If you overexpose substantially, the result will be disappointingly flat, watery, and toneless. Marked underexposure will give you transparencies in which the colors will be dark and somber.

The Quality of the Light

The more light you have entering the camera, the smaller will be the lens aperture, whether determined automatically or set manually. Conversely, if the light diminishes, you will have a wider lens aperture. The smaller the lens opening, the deeper will be the zone of sharpness; that is, the closest point to you at which objects will appear sharp, to the point farthest from you at which they will continue to be sharp. When wider lens openings are used, the zone of sharpness becomes narrowed.

If there is insufficient light, when it is dull outside or when you are taking pictures under low-level light conditions indoors, you will receive a warning signal. This means that you must

use the slower shutter speed. If you still get a warning signal, it means that you cannot take satisfactory pictures under existing light conditions.

The sun is more brilliant at midday than in the morning or afternoon. It is more brilliant when the sky is clear than when it has to penetrate the dust and soot that blanket certain industrial areas and cities with a haze. On a gray, foggy day you may need to use the slower shutter speed, because then the least sun comes through.

Bright sunlight produces sharp contrasts and deep shadows which are not at all good for outdoor portraits, whether in black-and-white or color, but particularly in the case of color. If your subjects face toward the sun, they will not be relaxed because of a tendency to blink or squint. While a hazy sunlight produces only half the brilliance of bright sunlight, it is preferred for outdoor portraiture because the haze diffuses the light and produces softer shadows. You do not want to eliminate shadows completely, however, for then your pictures would appear flat and dull.

The lighting which is ideal for color films is when the sun is beaming directly toward the subject from behind you, although it is satisfactory for the sun to be slightly off at an angle to the line of sight running from the subject to your camera. When the sun is at an angle, some of the subject will have shadows on it, depending upon the angle of the sun and the amount of shadow area it creates.

Exposure Qualities of the Subject

The light entering the camera is a reflection from the subject itself (unless the camera is pointed toward the light source, which should be done only in special cases when the beam of light itself is obscured). A bright subject will reflect twice the amount of light as one of average tones and, hence, the bright subject will require only one-half the exposure. A dark subject



The picture above and the ones on the following pages illustrate how different lighting conditions change a picture. Here, bright top and side lighting gives strong sculptural form to the boats and, especially, the sails.



On an overcast day detail is obscured and perspective is apparently flattened. Photographer is left free to concentrate on composition, emphasizing the pattern formed by the ships and their masts.



Backlighting makes the sails almost transparent and casts strong highlights on the waves. This heightens the sense of motion in the picture.

will reflect about one-half the amount of light as an average subject, thus calling for double the amount of exposure.

A light subject includes distant scenery, light-colored or white clothing, people with very fair skins, people on the beach or on the snow, etc. An average subject is dominated by middle tones or is made up of evenly distributed dark, light and middle tones. A dark subject includes people wearing dark clothing, heavily tanned or dark-skinned people, dark-haired animals, deep blue-green foliage, buildings of deep red brick, etc.

A light object side by side with a dark one creates some minor problems for the camera. An exposure specifically for the light object would result in an underexposure for the dark one and vice versa. Thus, suppose you were taking a picture

of two people standing side by side. Assume that one is dark-skinned and the other of fair complexion. If you were to expose for the fair subject, the other would be underexposed and hence would look darker than he really is. If you were to expose for the dark subject, the fair one would be overexposed to the point of not showing any skin texture in the print. The built-in exposure meter strikes an average. With manual settings or other special adjustments suggested below, you can expose for the one subject that counts the most.

Adjustments for Experience

Your exposure practices must take into account the experience you have with pictures made over a period of time.

If, consistently, your color films come back looking very dense, this is an indication that you need to use a lower film rating than you have been using. If your films consistently look thin, this is an indication that you need to use a higher film rating.

TIPS ON EXPOSURE

For most of your picture-taking, you will obtain fine and adequate results, especially with color films, when the sun is behind you or slightly to the side as you take your pictures. This will give you a relatively flat lighting without harsh shadow contrasts. In some cases, however, you cannot choose your ideal lighting. You need to modify the ordinary automatic picture-taking procedure for the particular conditions. Methods of doing so are discussed in this section.

Spot Readings

Suppose you wish to take a picture of a light-skinned person against a sharply contrasting background. If you take this picture at a distance of several feet to include some of the background, the photo electric cell will give you an average reading

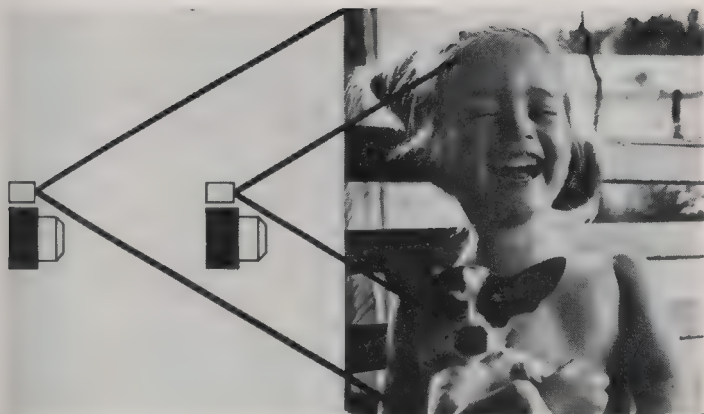
of the entire scene with the effect of having your main subject come out a little darker than it really is. The solution to this problem is to take your "exposure reading" very close to your main subject and then to back away to a proper shooting distance.

The way to do this is to move close to your subject so that he fills the area of the viewfinder. You should approach the subject in the direction in which you will later shoot the picture. This is very *important*. Now, make your "spot reading" as described in either of the succeeding paragraphs, depending upon which camera you have, and then back away to the normal picture-taking position to complete the exposure.

Automatic 35B, 35F, Motomatic 35F, Retina Automatic III. Press down the shutter release until a slight resistance is felt — about $\frac{3}{4}$ of the way, but not far enough to release the shutter. Continue to hold the release in this position while you step back to the actual position from which you want to take the picture. Then, press the shutter down firmly the rest of the way until you feel the click and the picture is made.

Automatic 35, Motomatic 35. With both of these cameras, you must manually adjust the lens opening as described in this paragraph. Step close to the person until he fills the finder. Then, *manually* move the pointer to the number to which the exposure meter needle points. On the Automatic 35, this is the EV number. Move the lock button at the rear of the camera, adjacent to the viewfinder, to the right and, at the same time, move the knurled wheel until the green pointer is set for this EV number. With the Motomatic 35, you follow the same procedure, except that you move the pointer to an *f*/number. Physically, however, the procedure is the same. When you step back to take the picture, you will put your finger on the shutter release for the first time.

The "reading" and taking positions, as just described, are diagrammed in Figure 4-1. Variations of this technique are described below.



IV-1. For scenes with considerable subject contrast, you can obtain a better exposed picture by making a "close-up" reading and a manual exposure setting. Move close to the subject so that the person fills the finder. Press down the shutter release until a slight resistance is felt. Continue to hold the shutter release in this position while you step back. Then take the picture.

Individual and Inaccessible Objects

The close-up reading technique should also be used when you are taking photographs of specific objects rather than of scenes. You would use this technique when the specific object is markedly lighter or darker than the surrounding area.

If you are unable to approach your subject close enough to take a reading, hold the open palm of your hand about six to twelve inches away from the light cell of the camera and take a reading. Of course, your hand must reflect the same kind of light as does the subject. The flesh tones of your hand are sufficiently neutral as to constitute an average subject. Another, more dependable, technique is to use a grey card with an 18% reflectance. This is available from photo dealers.



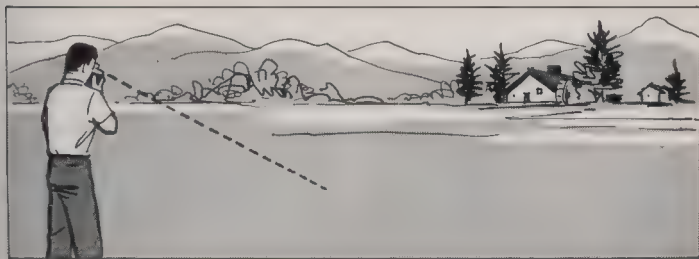
See the squirrel in the tree? The person making this picture did and fired away without the need for complicated adjustments. Built-in meter of the Motomatic 35F camera which made this picture has a "bee's eye" lens with special prisms which automatically compensate for sky brightness.



IV-2. Palm reading is useful as a substitute method for taking exposure readings of inaccessible objects.

Landscapes and Distant Scenery

In photographing landscapes and distant scenes, the main problem is that too much light enters the camera, particularly if there is a big expanse of sky. To make an exposure adjustment, point the camera downward at an angle midway between the horizon line and your feet. Make your exposure reading as described above. Then, raise the camera to the proper shooting position and complete the exposure. If you do not follow this procedure, the ground objects will be badly underexposed.



IV-3. When taking pictures of scenes, point camera down slightly to get a correct exposure reading.

Filters with Black-and-White Films

When using a filter to achieve a particular effect with black-and-white film, you must reduce the film rating *only while the filter is attached to the lens*. To do this, divide the film rating by the exposure factor of the filter and then set this into the camera, as described in Chapter 2.

THE SHUTTER AND DIAPHRAGM SYSTEM OF THE RETINA AUTOMATIC

With the Retina Automatic III, you have, in addition to automatic operation, the flexibility of using the automatic exposure control or of making camera settings to achieve desired effects. These settings are through individual adjustments of the shutter and diaphragm, whose purposes and use are described below.

The shutter speeds and the *f*/stops (diaphragm openings) denote the amount of light entering the camera. The shutter acts to slice off an interval of time; the *f*/stop regulates the volume of light going through the lens for the interval of time controlled by the shutter. The operation may be compared to that of a faucet. The hand serves as a shutter; it determines how long the faucet will remain open. The opening of the faucet valve regulates the volume and force of water, just as the diaphragm on the lens controls the volume of light for the interval of time.

The f/stop System

The *f*/stops represent the relative amounts of light which the diaphragm will admit at its various openings. The Retina Automatic camera has the following *f*/stops: 2.8, 4, 5.6, 8, 11, 16, and 22.

The *f*/stop ratings are established in a progressive series which bear a doubling relation to each other. Thus, *f* 2.8 admits twice as much light as *f* 4, while *f*/4 admits twice as

much light as $f/5.6$ and so on down the scale until $f/22$, which admits only one-half the amount of light of $f/16$. The formula to use, in case you want to compute this yourself, such as when you are jumping two or more f /stops, is as follows: *the difference in light-transmitting value of one f /stop as compared to another is found by dividing the square of the one into the square of the other.* For example, suppose you want to compute the difference between $f/8$ and $f/11$. The square of 8 is 64 and the square of 11 is 121. Hence, one is twice the value of the other or one-half the value of the other, depending upon whether you're going to a smaller or a larger opening. Suppose, now, that you are going from 8 to 16. The square of 16 is 256, which is exactly four times the square of 8, which is 64.

The Shutter Speed System

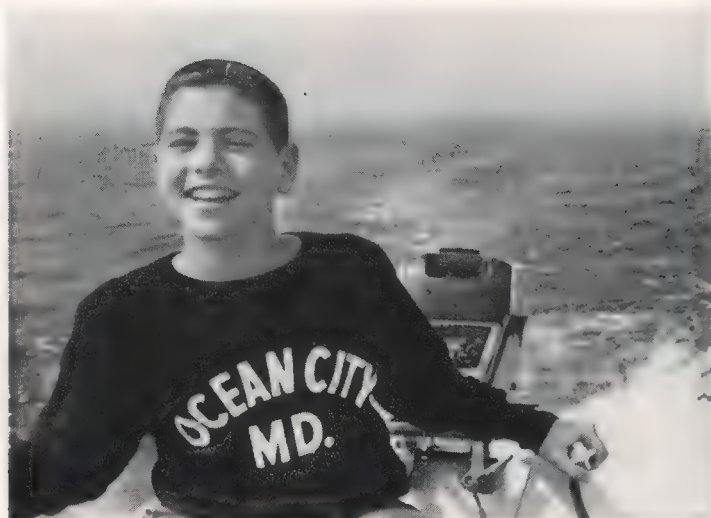
The same type of progression is organized into the shutter speed system, moving by halves, as follows: 30, 60, 125, 250, and 500. In each case, the number given here represents a fraction of a second, such as $1/30$, $1/60$, etc. Thus, depending on whether you are going in one direction or the other, a shift from one shutter speed to the next means either a halving or a doubling of the amount of light admitted into the camera.

If you shift more than one shutter setting, you must divide one into the other. For example, if you change from $1/250$ to $1/60$, the latter divides into 250 approximately four times, which means that it allows four times as much light to enter the lens.

Interrelating the Diaphragm and Shutter

This linear relationship of the two sets of lens controls permits you to achieve specific effects without altering the total amount of light admitted to the lens for a given exposure.

For example, suppose a given light situation calls for an exposure of $1/125$ at $f/8$, through the automatic setting. Now



Top lighting often causes the subject to squint, but this doesn't prevent you from getting a pleasant picture when the subject is young and healthy and having fun.



What might have been an ordinary snapshot of a lady fisherman is enhanced by the inclusion of the pylons as a compositional element. This framing draws attention to her as the subject of the photograph.

the action in the situation changes so that you must arrest movement through your shutter action. You decide to set the camera at $1/250$. If you change the shutter to this speed, you must compensate reciprocally by opening the diaphragm to the next larger f /stop in order to let the light enter at a rate of twice the volume (for half the time).

The principle is a simple one: once having determined the proper exposure setting, if you thereafter make a change in either the shutter or the f /stop, you must make a compensating change in the other so that an equivalent amount of light continues to enter the camera.

Now suppose that you wish to narrow the zone of sharpness. That is, you wish the objects in front and in back of the main subject to blur in order to give prominence to the main subject. If the exposure settings were $1/125$ at $f/8$, you could change the $f/8$ to $f/4$, which would require a compensating adjustment in the shutter to $1/500$. On the other hand, if you wanted to have as much sharpness as possible in the picture from front to back, you would use a larger f /number. In this case, you might set the diaphragm ring to $f/16$ while the shutter ring would be turned to $1/30$.

Flash Photography

Flash pictures are taken when there is insufficient light indoors or outdoors for satisfactory results. With the Kodak automatic cameras, taking a flash picture has been made extremely simple. The specific procedures pertinent to each camera model will be described under appropriate headings in the section which follows immediately.

USE OF FLASH WITH YOUR CAMERA

All of the cameras described herein can be used either with combustible (one-time) bulbs or with electronic flash. The combustible bulbs are used and discarded. They come in various sizes and types designed for a variety of reflectors. Descriptions of the available Kodak flash units and the bulbs which they take are given in the section succeeding this.

The lamp of an electronic flash unit may be used over and over again for thousands of exposures. While an electronic



V-1. A Kodak flashholder attached to camera needs no connecting cords and provides foolproof flash synchronization. It cannot be detached accidentally.

flash unit costs more initially, this is offset by a low upkeep and a low cost per exposure — provided you use it sufficiently.

The size of electronic flash units has tended to become smaller and smaller as a result of the utilization of transistors. A typical unit for the amateur now may contain the power supply as well as the flash head in one combined unit. Other electronic flash equipment has a separate power supply, which may be carried in a case suspended from the shoulder with a connector cord to a flash head which may be mounted on the camera in the same manner as a B-C flash unit.

Flash units typically have peak durations of $\mp 1/1000$ sec. Hence, their effect is to freeze action. If you are interested in buying an electronic flash unit, your dealer will have a great variety from which to choose. Kodak does not market its own brand of electronic flash units.

Automatic 35, 35B, Motormatic 35

All three of these cameras are designed to accept Kodak flashholders with Kodalite fittings. Attach any of these flashholders to the camera by inserting the posts of the flashholder in

the flash receptacles of the camera. Then tighten the flashholder knob. The camera is then ready for flash picture-taking, without further connections, in accordance with the instructions which follow.

Kodak Automatic 35:

1. Set the shutter speed at 40 (1/40 sec.)
2. Estimate the camera-to-subject distance in feet and turn the lens mount to the proper distance setting.
3. Select the flash exposure value card (from the holding frame on the back of the camera) that corresponds to the film in the camera. Slip this card into view in the holding frame.
4. The reflector diameter will tell you which size bulb to use. On the same line with the bulb size, refer to the distance in feet; under it you will find an exposure value number to which you will have to turn the pointer on the EV scale of the camera.
5. When using a Kodak Generator or Pocket Flashholder, select the EV number from the calculator on the Flashholder itself.
6. On the camera, move the manual lock button (adjacent to the viewfinder window) to the right and rotate the knurled wheel to move the green pointer to the selected exposure value number. You are now ready to take a flash picture for your subject at the estimated distance. If the shooting distance changes, you must recompute the exposure in accordance with the procedure just given.

Following is a table for comparing exposure value numbers to *f*/values when the shutter is set at 40 (1/40 sec.):

Kodak Automatic 35B:

EV Number	8.5	9.5	10.5	11.5	12.5	13.5	14.5	15.5
F Number	2.8	4	5.6	8	11	16	22	32

1. Set the film speed of the film you are using in the window labeled ASA.

2. Set the flash guide number as found on the appropriate exposure data card in the holding frame on the back of the camera. The flash guide number must correspond to the film and flash bulb you are using. Set this number on the camera as follows: depress the selector ring *lock* and revolve the selector *ring* counter-clockwise until the blue flash arrow snap-locks opposite the proper flash guide number on the lens mount. (*Note:* If you cannot turn the arrow to one of the lower guide numbers, change the focus setting to the closest distance which will permit lining up the arrow with the flash guide number.)

4. Estimate the distance from the subject carefully and rotate the lens mount-selector ring combination until the figure representing a distance from 5 ft. to 25 ft. appears opposite the index mark. Be careful not to depress the selector ring lock while setting the distance. (*Note:* The automatic flash control operates only within the range of 5 to 25 feet. The guide number will also determine the distance limits at which the scale can be set.)

5. When the selector ring was set for "flash," a shutter speed of $1/40$ sec. was automatically set. A check on the correct setting of the selector ring is automatically provided as you look through the viewfinder. A flash symbol should appear in the base of the view-frame; if it does not, check the setting of the selector ring.

Motomatic 35:

1. For pictures within the range of 5 to 25 feet, use the automatic exposure control. If the green pointer is not at automatic, rotate the knurled wheel to the right until the pointer locks automatically. If MAN appears in the viewfinder, the camera is not set for automatic exposure control. Otherwise, follow the same procedures as given above for the Kodak Automatic 35B, except that you must set the shutter speed of $1/40$ yourself. To do so, turn the knurled speed ring until "Flash" 40 is opposite the shutter speed index mark.

V-2. On Kodak Automatic 35's and Motormatic 35's, set flash guide number on lens mount.



2. For flash pictures at less than 5 feet and more than 25 feet, the camera is operated manually without automatic exposure control. Set the green daylight arrow on the selector ring at the green index line. Obtain the proper flash exposure by first selecting the correct guide number for the flash bulb and film in use. Then divide this guide number by the camera-to-subject distance in feet to obtain the lens opening number. (For example, with Kodachrome film, Type F, and an M-2 flash bulb, the guide number would be 60. At a camera-to-subject distance of 4 ft., the nearest lens opening would be $f/16$. Set the distance on the lens mount and set the lens opening or f /number in the same manner as was described for setting the EV number of the Kodak Automatic 35.)

Kodak Automatic 35F, Motormatic 35F

Both of these cameras have built-in flashholders. They are designed for easy flash picture-making at distances of 5 to 25 ft. The flash cover and reflector pop into position by sliding

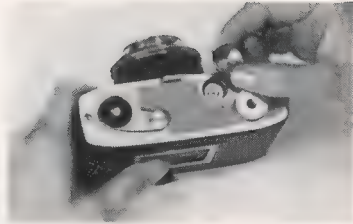
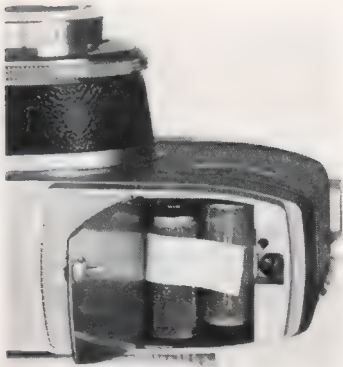
the round button, located on the back of the camera at the top right side in the direction of the arrow. Two N-size, alkaline manganese batteries are supplied with the camera. They are installed underneath the battery cover. In the Automatic 35F, they are inserted side by side with their bases pointing in opposite directions. In the Motomatic 35F, they are installed end to end with *both* bases toward the base of the camera. When fresh batteries are required, they should test at least two amperes.

These built-in flashholders use AG-1 or AG-1B bulbs. A flash bulb should be inserted in the socket by lining up the bulb base with the socket and pressing it down as far as it will go. To remove a bulb, slide the round button on the back of the camera in the direction of the arrow and tip the camera forward for the bulb to drop out.

Both cameras have alternate flash outlets for use with flashholders or electronic flash having a European-type flash connector. This alternate flash unit, however, should not be used simultaneously with the built-in camera flash because bulbs may fire on insertion. Flash guide numbers used with independent flashholders should be those supplied with the instructions packed with the film cartridge.

To take a flash picture, raise the flash reflector and insert a flash bulb. (*Note:* If the bulb does not enter the socket easily, sliding the button on the back of the camera in the direction of the arrow will permit the bulb to seat.) Next, set the film speed of the film you are using in the ASA window.

Now, set the flash guide number. You will find flash guide numbers for popular Kodak films and AG-1 flash bulbs on the two-sided exposure data card in the frame on the back of the camera. Now, depress the selector ring lock and revolve the selector ring counter-clockwise until the flash arrow is in line with the appropriate flash guide number on the lens mount. If you cannot line the arrow up with a sufficiently low flash guide number, change the distance setting for the closest one that



V-3. Automatic 35F and Motor-matic 35F have auxiliary outlets for independent flash units. Note battery arrangements of both these cameras.

permits the arrow to line up with the desired guide number. Setting the guide number automatically adjusts the shutter speed for flash ($1/40$ sec.) regardless of the speed setting on top of the camera.

To take pictures in the 3-to-5 ft. range, use the next lower guide number.

Estimate the distance of the subject from the camera. Then, rotate the lens mount-selector ring combination until the figure representing that distance in feet is opposite the focus index. Be careful not to depress the selector ring lock while focusing.

Kodak Retina Automatic III

The Retina Automatic III has built-in synchronization with a European-type flash socket. Any of the Kodak flashholders described below may be used with the Retina Automatic III, provided you first attach the Kodak Retina Flashholder Bracket. This bracket is attached to the tripod socket of the camera. The tip of the power cord of the bracket is inserted into the flash socket of the camera. The Kodak flashholder is then attached to the bracket.

Flash bulbs may be synchronized with the camera shutter at a speed of $1/30$ sec. only. (Electronic flash synchronizes at all speeds.)

To set the camera to take a picture of a subject at a particular distance, first find that camera-to-subject distance, using the camera rangefinder. The distance figure will appear automatically opposite the focusing index mark. Now, from the film instruction sheet, select the proper flash guide number for the flash bulb you are using. Divide this number by the distance you have just found. This will give you the desired lens opening or *f* number which you should set on the camera. You may turn the lens opening ring till the nearest *f*/number appears opposite the index mark.

KODAK FLASHOLDERS

Several different Kodak Flashholders are available for use with any of the Kodak automatic cameras. All are fitted with Kodalite posts which fit into the flash receptacles of the camera or into the flash receptacles of the Kodak Retina Flashholder Bracket. These flashholders are not needed for the two automatic cameras which have built-in flash reflector units.

The Kodalite Super-M 40 Flashholder is supplied complete with interchangeable 4-inch and 3-inch reflectors for greatest efficiency, selectively, with No. 5, 25, M-5, M-25, or M-2 bulbs.

The Kodak Rotary Flashholder, Type 1, features rapid-sequence lamp firing. Six M-2, M-5, or M-25 bulbs are pre-loaded in the magazine and advanced to firing position by rotating the turret.

The Kodak Generator Flashholder, Type 1, is a small, compact, pocket-sized flashholder which uses no batteries. A spin of the generator hand-wheel charges the capacitor with ample power to fire the flash lamp. The Flashholder accepts No. 5, 25, M-5, M-25, or M-2 bulbs.

The Kodak Pocket Flashholder, B-1, is similar to the Kodak Generator Flashholder, except that it is battery-powered.

The Kodak Super-Mite Flashholder features full flash power in a mini-sized flashholder designed especially to accept the new, extra-small, low-cost AG-1 flash lamps.

SOME BASIC RULES OF FLASH PHOTOGRAPHY

In the preceding sections of this chapter, you've been given enough information to enable you to take flash pictures under practically all circumstances in the expectation that you would obtain satisfactory results. For the best possible results, you may want to know more about the characteristics of flash under different conditions.

Characteristics of Flash Illumination

The further away the flash illumination travels from its source, the weaker is its intensity. This can be noted especially when you take a picture of a subject which includes objects extended in depth away from the source of illumination. Thus, if you take a picture at a party and expose for the center of a group of people, those in front will have a burned-out appearance while those toward the back will come out very dark. This is noticeably true when taking pictures at close distances. It is less obvious if you can back away from the subject, but then the picture details will be smaller.

The behavior of light in this way is called the "inverse square law." It may be stated as follows: *The intensity of light varies inversely with the square of its distance from its source.* For example, compare the intensity of light at 5 ft. and 10 ft. away from the flash unit. Squaring each of these distances gives you 25 and 100 respectively. Thus, although the difference in distances is in the ratio of 1:2, the difference in light intensity is in the ratio of 1:4. Stated otherwise, a person 5 ft. from the flash unit would receive four times the amount of light as someone twice as far away — or 10 ft.

Now, when you back further away from your subject, you can reduce this contrast in illumination. For example, compare the distances of 15 and 20 ft. away from the source of illumination. Squaring both gives you 225 and 400 respectively. Now the drop-off in light intensity is in the ratio of approxi-



Direct, head-on flash lighting gives a bright image with sharply decreasing background detail due to rapid fall-off of light. If subject is far from a dark background, as in this photo, it is often almost completely underexposed.



Another demonstration of light fall-off from direct flash lighting. Boy and girl are very close to each other, but the face of the boy is much brighter (almost washed out, in fact) than the face of the girl behind him.

mately 1:2. While there is still quite a difference here, it is not quite as pronounced and, with black-and-white film and color negative film can be adjusted in enlarging.

Light Reflectance

Exposure for a given subject is determined by the amount of light reflected off that subject. Two other kinds of reflectance come into play here: one is the reflector in back of the lamp itself and the other is the extent to which any surrounding surfaces reflect light back onto the subject. The Kodak flashholder reflectors are designed for maximum efficiency. They are bowl-shaped (parabolic) because this kind of reflector directs most of the light to the area where you need it. Certain independent flash units can also be used with the Kodak cameras, particularly the Retina Automatic III. Those which have collapsible, fan-type reflectors spread the light in a more diffused pattern. Because there is a wider distribution of the light, with less concentration, the light is a little less efficient. You must use either about $\frac{1}{2} f/\text{number}$ wider lens opening or a slightly lower flash guide number.

When taking pictures within an enclosed area, the walls and ceiling act as a giant secondary reflector. Because of the extreme rapidity with which light travels, it has time to bounce off the ceiling and walls back onto the subject before the shutter closes. The smaller the room and the lighter and brighter its surfaces, the more brilliant will be the reflectance of light on the subject itself.

The guide numbers given on the back of your camera or flashholder or on the carton of flash bulbs assume that pictures are to be taken in a room of average size with walls and furnishings of medium-light characteristics. The inverse square law, described above, has its effect here, also. Since the light must bounce off the interior surfaces onto the subject, it is obvious that the further it has to travel, the more diminished will be its effect. Accordingly, the higher the ceiling, the more distant

the walls, the darker the walls and floor, and the softer or more porous the surfaces, the less powerful will be the light reflected from all these surfaces onto the subject.

The practical rule to bear in mind is that you should use the next lower guide number, when taking pictures in a very large enclosed area, or the next higher guide number when working in a very small light-colored room.

USING THE FLASH CHARACTERISTICS

Although the falling off of light when using flash is a disadvantage, you can put it to effective use under certain circumstances. You can also take advantage of the high-peaking characteristics of electronic flash. For the one, the advantage is in stopping action.

Background Control

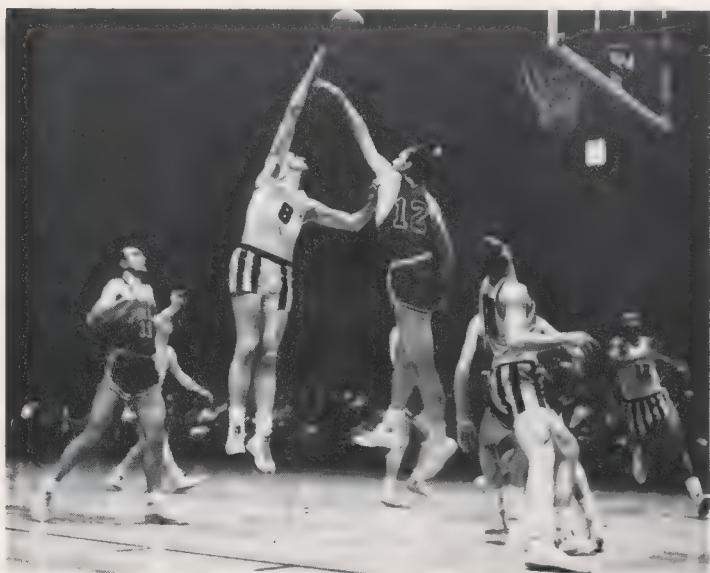
To concentrate attention on a specific subject, you can eliminate or subdue the background by removing objects from it, by control of lighting, or by varying the distance of the subject from the background. In portraiture, where this is most important, you take advantage of the inverse square law by moving your subject further away from or closer to the background as best suits your needs. For example, with a dark-haired subject you would want the background lighter, while with a light-haired subject you would want the background darker. This is independent of the color of the background itself, provided it is not black, or nearly so.

Another means of lighting a background is to direct a flash from the side or rear of the subject onto the background, making sure that none of the direct rays of the flash points toward the camera lens. A lenshood should be used to shield the lens from stray light. For this purpose, you can use a flash bulb slave unit, available from your photo dealer. Such a slave unit is "triggered" by the firing of the flash bulb at the camera. It does not affect your flash exposure computations.

Avoid glare reflection and hot spots on background subjects or surfaces. Shooting at a slight angle in relation to the background wall or line of objects will minimize this.

Stopping Action

With electronic flash units, the very short flash duration is sufficient to stop most action, regardless of the shutter speed of the camera. The longer the shutter is opened, however, the more it is possible for the sharpness of the image to become contaminated by the entrance of extraneous and irrelevant light. Accordingly, unless you had a special reason for admitting some of the existing light (as in daylight fill-in flash), it is ordinarily best to synchronize electronic flash at one of the faster shutter speeds.



Flash units are standard equipment for new photographers who must get a picture on each and every assignment. Electronic flash units, with their high effective speeds, are especially useful in sports photography.

6

Color Photography

Color pictures are exciting. Color adds another dimension to picture-taking. You can duplicate the beauties of nature. You can duplicate the original colors of costumes, flowers, festivals, and pretty things. You can capture the pink of skin, the blue of eyes, and the red of lips. For all of its excitement, however, color photography makes a few demands of you.

Color films must be matched to the light source for which they are designed. Moreover, you cannot mix light sources, such as sun and incandescent bulb. Your exposures must be made carefully, because color films don't respond too well to underexposure or overexposure. In composing pictures, you must be aware of color harmonies, contrasts, and proportions of color.

If you follow a few simple rules, you'll be delighted with the results.

COLOR FILMS

Matching Films and Light Sources

Positive films (also called reversal films) which come back to you developed as transparencies for direct or projected viewing are designed for use with specific lighting sources. The three types of lighting for which they are designed are Daylight, Tungsten (or Floodlight) and Clear Flash. When a film designed for a particular kind of lighting is used with a different light source, it is apt to be too reddish or too bluish, depending upon the particular combination of film and light. It is possible to use other light sources than that originally intended for a given film, provided you also use a correcting filter, as explained below.

The light sensitivity of a "daylight" film is adjusted for the composition of daylight — not just any daylight, but that which you would find with a clear sky from about two hours after sunrise to about two hours before sunset. Daylight films are also balanced for blue flashbulbs as well as electronic flash, because these lighting sources have a corresponding color "temperature."

Tungsten or indoor films are for use with photoflood lamps. Some people prefer to use this film as a universal film because it is more sensitive to light and, hence, does not lose relative sensitivity when used in conjunction with a filter for flash or daylight photography.

Clear flash color films cannot be used with blue flashbulbs for to use them so will result in an unsightly blue cast.

Negative color films are universal because you can compensate for differences in light source when you are making prints through your enlarger. Although you can mix your lighting sources, on the same film, it is advisable to adhere to one lighting source throughout, whenever possible. This will make the processing of color prints much easier and will minimize the likelihood of error. *You cannot, however, mix lighting sources on any one frame of film.*

The Available Films

Reversal color (positive transparency) films are:

Ektachrome Daylight type, exposure rating 32 in daylight and electronic flash, 12 with photoflood bulbs and an 81A filter.

Ektachrome Type F, for clear flash, exposure guide number 120 with 5 and M-5 and 25 and M-25 flashbulbs based on use of a polished reflector and 1/60 sec. or slower; exposure rating 16 in daylight with an 85C filter and 16 with photoflood lamps and an 81A filter.

High Speed Ektachrome, Daylight, exposure rating 160 daylight and electronic flash, guide no. 180 with clear bulbs and 80C filter.

High Speed Ektachrome, Type B, exposure rating 125 with 3200K studio lamps, 100 with photofloods and 81A filter, guide no. 220 with clear flash and 81C filter, 80 daylight with 85B filter.

Kodachrome Daylight, exposure rating 10.

Kodachrome Type F, for clear flash, exposure rating 10 in daylight with 85C filter.

Kodachrome II Daylight, exposure rating 25.

Kodachrome II, Type A, exposure rating 40.

Negative color films are used for the making of positive color transparencies, positive color prints, and positive black-and-white prints. Thus, they provide an unusual versatility which is particularly attractive to professional users who may want to use the same picture in a variety of media. The Kodak negative color film is Kodacolor.

Kodacolor has an exposure rating of 32 in daylight, 12 with electronic flash and an 85 filter, 20 with photoflood and an 82A filter, and 16 with 3200K studio lamps and an 82C filter. With flashbulbs, a guide number of 120 is used for 5 and M-5 and 25 and M-25 flashbulbs, using a shutter speed of 1/60 sec. or slower.

FILTERS FOR COLOR

In the preceding section, references were made to specific conversion filters, available from your dealer, which would permit films to be used with light sources other than those for which the films were originally intended. For really critical work, you should bear in mind that ideally you should use balanced film and lighting. When you place a filter in front of the lens, even the best optically ground filter introduces the possibility of the minutest distortions. These are of no concern whatsoever for ordinary amateur photography and for such purposes need scarcely be mentioned.

The general rule you should use, particularly if you are an amateur photographer, is to put in the camera that type of film on which you expect to make most of your exposures with a given light source.

When using a filter, divide the ASA rating by the filter factor and reset the rating on the camera.

Color Balancing or Toning Filters

The color qualities of daylight undergo changes from early morning through late afternoon. Early morning pictures have a pronounced warm and rosy hue. As you approach mid-day, the pictures exhibit more snap and brilliance with their colors appearing in a more natural balance, consistent with the qualities of the film itself. Toward late afternoon your pictures once more begin taking on a warm and rosy glow. The reason for these changes is that daylight color film is balanced for the composition of daylight at mid-day. At the opposite ends of the day, the red part of the daylight spectrum becomes more prominent and hence gives you the effect of an over-all red tone.

On cloudy or heavily overcast days, or even in the shade on bright sunny days, color pictures tend to take on a bluish cast. This is due to the very high blue content of daylight under such conditions. Subjects photographed in the midst of snow

also show a bluish cast because of the way in which the snow reflects the excessive blue radiation of the sky.

To balance the color for those early morning and late afternoon shots, you should use a compensating filter of a color-cooling type. This would be a blue-tinted filter. It functions by holding back some of the red end of the spectrum.

If you have an excessive amount of blue light in your pictures, you should use a color-warming filter, one with a red tint in order to hold back some of the blue end of the spectrum. For most pictures in the open shade or on overcast days or in snow, you can use a UV or skylight filter.

Color Neutral Filters

A polarizing screen or filter is for use with black-and-white or color films. It controls or eliminates reflections on non-metallic surfaces, such as glass or highly finished wood or plastic. Polarizing filters are the only means of darkening the sky, with the same effects as when using a deep red filter or a deep orange filter with black-and-white films.

A neutral density filter is used to reduce the amount of light admitted into the camera through the lens. It may be used: (1) if you have a very sensitive film in the camera and are unable to stop the lens down sufficiently in bright sunlight or with close-up flash pictures; (2) when you want to use a wider lens aperture in order to narrow the depth of field and you are unable to reduce the light transmission with the shutter alone; and (3) when working at extremely close distances with brilliant flash. Neutral density filters are available from your dealer with varying exposure factors.

TIPS ON COLOR PHOTOGRAPHY

Exposure Suggestions

Generally speaking, your aim is to "hit it on the head" when exposing color films. While you have much more latitude with

color negative films (as with black-and-white negative films), with reversal color films such as Ektachrome and Kodachrome, there is very little latitude for error. The reason for this is found mainly in the developing process itself. The color film is first developed as a negative, and when it is reversed chemically, it comes out as a positive. This procedure allows no latitude at all for modifying the results through development. With negative color films, your latitude comes at the time that you make your positive print or color transparency.

The exposure ratings for color film are to be used as guides. That is, based upon the results you obtain consistently with your camera, you might vary the official exposure indexes slightly. For example, some photographers like to expose at a slightly faster rating in order to get slightly deeper colors.

The exposure indexes of Ektachrome materials can be doubled, but if this is done, your processing laboratory should be notified so that adjustment can be made during development. If you fail to do this, your films will come back as though they were underexposed. Be sure your film processor offers this kind of service.

Overcoming Dense Shadows

The limited exposure latitude of color films is most notable in pictures made with side-lighting, where the light produces deep shadows. These come out harsh and rather unsightly. When the sun is directly overhead, it produces the same side-lighting effects, except from a different direction. Thus, deep shadows may be seen in the eye-sockets or under the chin or under a broad hat-brim which may effectively black out most of the face.

One technique for overcoming these deep shadows is to use daylight fill-in flash as discussed in the next chapter. Another technique is to use a reflecting board or other neutral reflecting surface. One such board may be made easily by crumpling aluminum foil and then pasting it to a sheet of cardboard after it has been straightened out. The crumpling introduces a myriad

of creases which soften the light reflections and avoid "hot-spotting."

Adjacent Color Reflections

Another difficulty not noticed in black-and-white photography stems from the tendency of colors to be reflected onto adjacent surfaces. Thus, if you wear white trousers and stand next to a mass of dense green foliage, while being photographed with color film, you would find that this green is picked up on the trousers themselves, both in the color transparency and the color print. The corrective action here is to place the subject so as to avoid these reflections and also to find a camera-shooting angle which avoids them.

Outdoor Portraits

Brilliant sunlight is to be avoided for outdoor portraiture unless coupled with daylight fill-in flash. The subject will never be relaxed if he faces directly toward the sun in order to give you flat lighting. On the other hand, if you have overhead lighting or side-lighting, you will have the characteristic hard shadows under the chin, under the eyebrows, and under the hat-brim.

The ideal lighting outdoors is that created by a hazy bright sun. It is brilliant enough to enable you to take pictures with short exposures or small diaphragm stops and it is soft enough to cast shadows of a corresponding softness.

Flower Backgrounds

When photographing flowers, the effect will be much more striking if you can "insert" a simple or clear background. This is done by slipping a piece of cardboard in back of the flower so that it stands by itself without interference from other 'flowers, foliage, or objects. The background can be white or black or any other tone or color, depending upon the color of the

flower itself, in order for you to get the desired contrast. A light blue will simulate the color of the sky. Black will provide a dramatic contrast for a bright and delicate flower. It will also eliminate the problem of what to do about shadows from the sun or from flash. When using an automatic camera, a very light background may result in some underexposure of dark flowers.

One way out of the shadow problem is to photograph the flower against the sun, *but not with the automatic setting*. This will work only with flowers whose texture permits the sun to come through sufficiently in order to bring out the delicacy of the floral structure. In taking an exposure reading of the flower against the sun, bring the meter as close as possible so that the sun's rays do not fall upon the window of the exposure meter.

Color Distractions

In black-and-white photography, some bright object in the foreground or background would come out as another tonal mass in the range of light to dark. In color photography, it could come out as a distracting blob of bright, out-of-focus red, yellow, blue, or other intense color. Hence, if you can control your background or foreground, you should be alert for these color masses in order to remove them. Sometimes you can change your working position in order to remove them from the field of view or to avoid unsightly and distracting reflections.

Additional suggestions on distractions are contained in the chapter on flash photography.

Black - And - White Photography

In many respects, black-and-white photography, the older medium, is more difficult than color photography. The black-and-white medium, for best pictorial effects, puts a premium upon the careful manipulation of tonal ranges in a monochromatic scale. It is a black-and-white interpretation of real life, which is full of color. There are situations, however, in which the effective use of black-and-white brings greater attention to the subject matter itself.

In this chapter, we discuss the various films available for black-and-white photography, the filters used with the films, and practical suggestions for picture-taking in this medium.

BLACK-AND-WHITE FILMS

For black-and-white picture-taking, you can obtain films ranging from moderately slow to super fast, depending upon

your needs. If you use the fastest films, you must sacrifice other desirable qualities, noticeably extreme fineness of grain and clarity of detail, although with the relatively small "jumbo" prints this should not be a disadvantage. If, however, you ever plan to enlarge small sections of a negative, or to make big blow-ups of entire negatives, you will be glad that your negative has qualities which make it capable of maximum enlargement.

Film Characteristics

In this section we will examine the three film qualities of grain, image sharpness, and speed. You should keep in mind, however, that the quality of the final picture depends upon factors other than the quality of the film itself. These include, for example, proper exposure, proper holding of the camera during exposure, quality of developing, and the quality of enlarging and processing of the print.

When you enlarge any negative image sufficiently, you will get a print which reveals something of the grain characteristics of the film. At some point, no matter how fine the grain, the smooth tonal areas begin breaking apart so that they present a coarse appearance. When we refer to the graininess of a film, we mean the degree of coarseness of the little clumps of developed silver grain which form the image. A fine-grained film will present a smoother texture if properly developed than a coarse-grained film.

One obvious advantage is that the finer the grain, the better is the negative able to render the finest details clearly. The coarser-grained films, however, are seen to present a rather ragged edge on image details when projected onto paper during enlargement.

It would seem easy to say that the obvious thing to do is choose film which has the finest grain, but these also happen to be the films which are the least sensitive to light. Those which are very sensitive, including those which are called "fast" films, tend to be the most grainy or the coarsest. Hence you must

balance preference for certain qualities with need for other qualities. If you simply must have a very sensitive film, you must be prepared to sacrifice some sharpness and fineness of detail. This may not be too apparent, however, with "jumbo" snapshot prints. With bigger prints, however, the differences will be noticeable.

Image Sharpness

Few of us hold a picture up close to the eye to study its grain pattern. Rather, we look at a picture at some varying distance, depending upon the size of the picture. Comfort dictates that we examine a small picture at a close distance, while a big picture is looked at from afar. Hence, in many cases a little grain may not be too important because it tends to fuse together into an over-all tonal mass which creates a certain kind of impression.

What seems to be even more important than grain is the apparent sharpness of the picture. This is governed largely by the way in which the tonal areas stand apart from each other. This quality is called *acutance* or *contour-sharpness*. A sharp distinction between tonal areas is characterized by the abruptness in the discontinuity of one tonal mass from another of a different brightness.

For example, imagine a solid black or dark gray rectangle surrounded by a field of white. If the film has good acutance qualities, the rectangle will have a rather sharp edge. The poorer the acutance quality or contour-sharpness, the fuzzier will be the separation between the dark and light areas. A close examination, particularly with the aid of a magnifying glass, would show that the dark and light edges tend to blend and fuse into each other.

While it is possible for a film to have both fine grain and excellent acutance, it is also possible for one quality to exist without the other. There is a growing belief, however, that acutance is much more important than fine grain alone.

At one time, contour-sharpness was a unique property of only the slowest, thin-emulsion films. A more recent development is that this quality has been incorporated into the faster films.

Film Speed

A *fast* film is one that requires less exposure under identical conditions than a slower film. That is, the picture can be taken with a shutter that operates more rapidly. Out of this grows the use of the term film speed. The *film speed* or exposure rating expresses the relative sensitivity of a given film to light.

As a general rule, the slower films yield the finest grain and the sharpest image contours. They tend, also, to be a little contrasty in their rendering of highlights and dark areas. On the other hand, the faster films achieve their sensitivity, usually, at the expense of building up thicker and coarser grain deposits. Again, the effects of these will not be noticeable in ordinary snapshot prints.

As you can see, while there are undoubtedly all-purpose films, these must compromise certain qualities. There is no single film which will satisfactorily meet all of the requirements you might conceivably set forth.

The Available Films

In the slow category of films, Kodak makes Panatomic-X. It yields ultra-fine grain, sharpest image contours, and a tendency toward contrastiness in the rendering of tonal areas. It has an exposure rating of 50 daylight, 40 tungsten.

The Kodak intermediate film is Plus-X Pan. Although not quite as grainless as Panatomic-X, it affords clarity and crispness of detail as a result of good contour-sharpness. This film is used by many photographers as an all-purpose film for good weather and foul. It is a favorite, also, of "available-light" photographers.

Kodak's super-high speed film for 35mm cameras is Kodak Tri-X. It is unusually sensitive to light. It is used for photography under subnormal light conditions, usually called "available-light" photography. Structural characteristics of this film have been improved to such a degree that it offers a minimum of graininess, together with excellent acutance. Some decrease may be observed in the contrast qualities of the film, leading to a softness and compression of tonal values. The exposure rating for Kodak Tri-X Pan in both daylight and tungsten is 400.

FILTERS FOR BLACK-AND-WHITE FILM

Purpose of Filters

The purpose of a filter is to alter the color composition of the light that reaches the film. This applies to the light as a whole or to the color of specific objects as reflected by them towards the camera. If you intercept sunlight with a glass prism, you'll see how it separates into its color components — violet, indigo, blue, green, yellow, orange, and red. This is the effect of a rainbow. For some purposes, as in sky photography, you may want to hold back part of the light — the blue part — in order to bring out the clouds more dramatically. For this purpose, you would use a filter that does not transmit blue light.

A basic rule which will help in selecting a filter is to remember that a given color lightens subjects of a corresponding color and darkens complementary colors, as seen in the final print. Thus, if you take a portrait using an orange filter, the lips will come out pale because the increased proportion of red light passing through the filter will register more heavily on the film. A green filter, on the other hand, will render red objects darker, because the red light will be excluded and hence the film will be less exposed in those areas. Following is a table which shows the complementary color of the filters to be used with the designated color of an object:

<i>Color of Object</i>	<i>Filter to Be Used</i>
Blue	Orange filter
Purple-blue	Yellow filter
Red-purple	Green filter

Black-and-White Filters

Note: Use the appropriate exposure for each filter, other than the UV. Divide the exposure factor of the filter into the ASA rating. Then, use the result in computing exposure.

Ultra-Violet (UV). This filter absorbs ultra-violet rays only. Hence, it can be used either with black-and-white or color film to absorb excess ultra-violet radiation, particularly in outdoor scenes where the sky predominates, or where you are taking pictures of distant scenes. Use of this filter in landscape photography helps eliminate the characteristic haze of the background. No increase in exposure is necessary.

Yellow. Yellow filters absorb ultra-violet rays and some part of the visible violet. In addition to their use in eliminating background haze in outdoor photography, yellow filters render blue skies slightly dark to emphasize cloud effects or to provide a contrasting background for light architecture. Otherwise, light buildings tend to fade into an overexposed sky. The yellow filter is also suited for general outdoor photography, including beach, snow, seashore, flower blossoms, and foliage. In the case of snow, excessive reflection of the blue sky tends to throw a bluish cast over the picture. This is offset by the yellow filter.

Orange. Orange filters serve the same general purpose as yellow filters, but they do so with a more pronounced effect. They are particularly helpful in haze-penetration. In architectural photography and in brilliant outdoor scenes where the light strikes from the side, they render a more pronounced texture. They are useful in subduing excessive brilliance of water scenes while rendering the sky quite dark.

Green. Green filters are used in outdoor portraiture and in taking pictures of landscapes and foliage. The green filter darkens red lips. It lightens green foliage and it also darkens the sky somewhat by holding back some of the excess ultra-violet radiation.

Polarizing filter. Reduces or cuts out disturbing reflections from shiny surfaces (spectacles, polished areas, water) other than metal.

TIPS FOR BLACK-AND-WHITE PHOTOGRAPHY

Since you are working with a single tonal range, from white to black, without the natural differences that you find in real-life colors, picture-taking with black-and-white film is, in many respects, more difficult than with color film. In the latter, you have a medium of greater versatility, for you can use color to establish centers of interest and to create contrast. You can also use colors for their sheer effects in themselves. For its part, however, black-and-white photography has its own strengths. It gives prominence to subject matter. It provides flexible opportunities for a wide range of tonal manipulation from light to dark without seeming to distort tonal values of subject matter.

While some specific suggestions for picture subjects are contained in a later chapter, the comments which follow are related mainly to technique. Subject matter is given depth and greater prominence, where needed, through the judicious selection of light and shadow combinations. Since black-and-white film has a much wider latitude than color film and can be manipulated more flexibly in the enlarger, you should strive to give body to your shadows by retaining full shadow detail. On the other hand, highlights on the film should retain their transparency. That is, they should preserve the texture of skin or material. The advanced photographer, particularly, will want to expose in anticipation of the developer to be used.



From a technical standpoint, this picture of a little girl caught in mid-gobble at the dinner table is far from perfect. Yet the action is interesting and the subject is appealing. The light is to the girl's back, which might have caused the face to be in deep shadow, but the exposure control of the camera was sensitive enough to read the light reflected into the eye by the bright china.

8

Available - Light Photography

“Available-light photography” is synonymous with the term “existing light photography.” It is the photography of subjects illuminated under low light levels. It covers a variety of situations, including indoor lighting, outdoor photography at night, stage photography and photography under substandard daylight conditions, particularly at dawn and dusk.

The picture taken by available-light is characterized by a feeling of realism. The light and shadow patterns are those which typically you would find in the situations in which pictures are taken, as opposed to the head-on brilliance associated with flash photography.

Because super-speed films such as Kodak Tri-X Pan are used extensively for taking available-light pictures, the results are sometimes characterized by a noticeable graininess, when big enlargements are to be made of sections of the negative.

Many photographers prefer Kodak Plus-X Pan, as explained at the end of the chapter.

With any of the Kodak automatic 35mm camera lenses and the available films, you have enough speed or sensitivity to enable you to take pictures under the greatest variety of conditions. While automatic operation may be possible, in many cases you will want to use manual exposure control procedures.

TYPES OF AVAILABLE LIGHT

Each of the different types of lighting associated with available-light photography has its own working characteristics. The differences are characterized mainly by variations in highlight and shadow formation. The types of lighting to be discussed below are:

1. Low-level daylight.
2. Window daylight.
3. Single-point artificial light.
4. Multiple-point artificial light.
5. Spotlighting.

Low-level Daylight

Two different situations you may encounter are (1) the diffused, shadowless and flat illumination of a heavily overcast or cloudy day and (2) lighting at dusk or at dawn.

The satisfactory treatment of the first category of flat lighting is generally accomplished through a combined approach of slight underexposure and slight overdevelopment. Through this means, the flatness of the picture will be offset somewhat by the building up of contrast in the negative. Furthermore, in the print-making stage, additional manipulation can lead to further development of tonal contrast. Slight underexposure requires a slight uprating of the ASA film rating.

It is helpful also to select subjects or arrange material within the area of the picture for maximum subject-matter con-



The built-in exposure meters of the Kodak automatics are sensitive enough for readings in open shade and under overcast skies. Here the photographer zeroed his meter needle quickly to catch his subject in a carefree moment.

trast, particularly in balancing dark and light masses. Pictures should be kept quite simple and uncluttered.

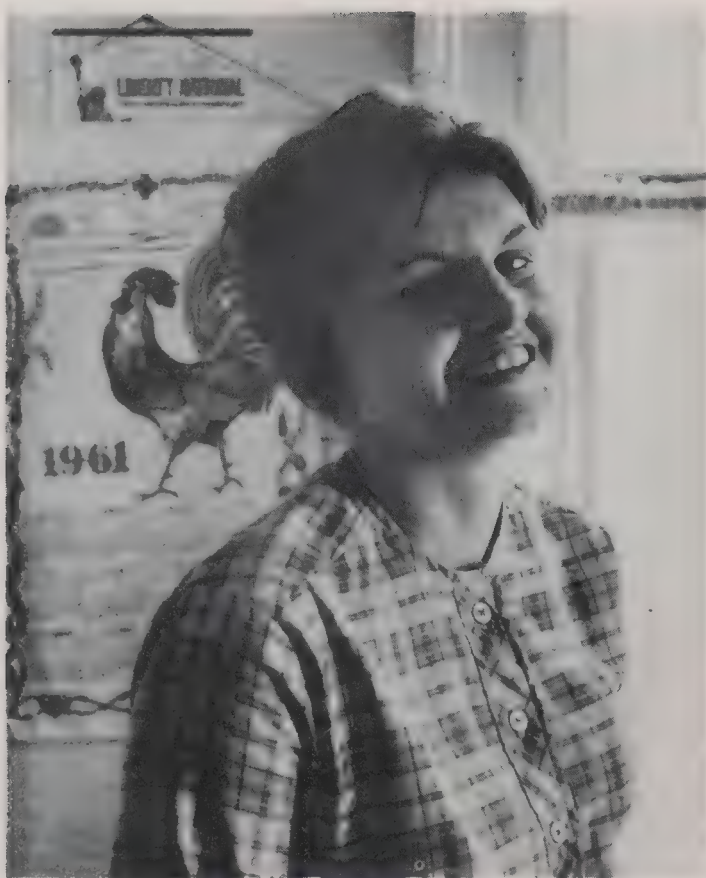
Pictures taken at daybreak or when the sun is declining over the horizon frequently offer opportunities for unusual effects.¹ With color films you can concentrate on sky effects if you desire, choosing your exposure for either a darker or a lighter sky, depending upon the effect desired. If you take pictures with the camera pointed toward the sun, details of ground objects will be blacked out unless you expose specifically for them, in which case you will lose much of the depth of color in the sky. If the sun is just above the horizon and is in back of you, it will throw out long rays of a warm and soft light which will illuminate objects with a head-on effect, casting deep shadows in back of them, as though a gigantic spotlight were being used.

Window Daylight

The light coming through a window varies in its photographic performance with the quality of the daylight itself, the placement of the windows, and the clearness or lack of it of the windows.

If the sun streams through the window, it will create a spot-lighting effect broken up by window crossbars, if any. Such direct lighting will travel the full length of a room, depending upon the height of the sun. Exposure for anything illuminated directly by the sun will result in marked underexposure of other objects in other areas of the room. On the other hand, exposure for the accompanying low-level illumination in the rest of the room will result in a burning-out of the portions which are directly sunlit.

The non-sunlit portions of the room are illuminated by a combination of reflected outdoor light entering the window from many different angles and the bounce-lighting caused by the sun entering the room. This is a diffused, soft lighting which



Keep your camera handy and you can always take pictures of friends who drop in to chat. Take your reading from the shadow side of the subject when you are shooting by window light so that there will be detail in the face.

is highly directional as regards the light entering through the window.

Single-point Lighting

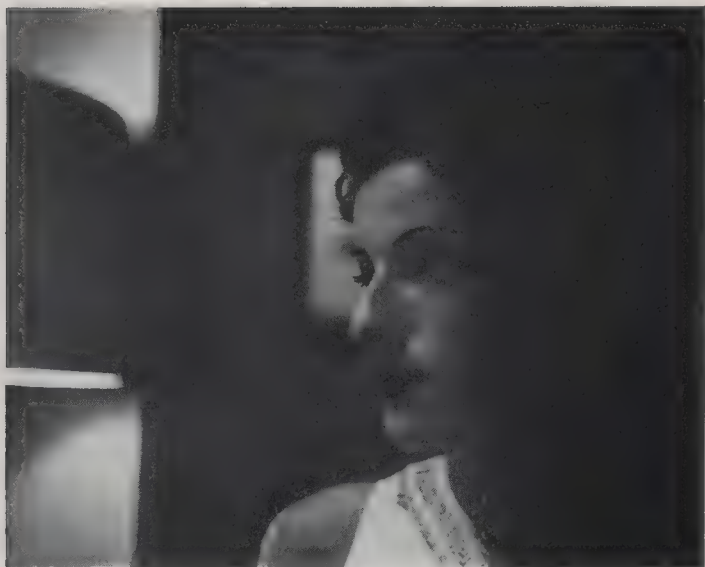
Lighting from a single-point source (other than a fluorescent strip) produces many of the same effects as sunlight. When it is directly overhead, a person's head will have shadows in the eye-sockets, under the nose, and under the chin. When it is off to the side, it will produce the same kind of side-lighting effects as the sun. Unlike the sun, however, the behavior of the artificial light conforms to the inverse square law, as explained in the preceding chapter on flash photography. That is, the light falls off rapidly as it travels away from its source. If the light were suspended from the ceiling in the middle of the room and you backed off to take a picture of as much of the room area as possible, you would see how objects closest to the light receive the brightest coverage, while objects radiating away from the center of the light uniformly trail off into a circle of darkness.

For some pictures, the stark realism of this familiar kind of light, especially in conjunction with humanistic subjects, is very desirable. For ordinary purposes, in order to offset the shadowed effects of the harsh lighting, it may be necessary to use reflector boards.

Multiple-point Lighting

When a lighting fixture has a number of bare light bulbs clustered together, or separately enclosed light bulbs in a cluster, their effect is similar to that of a single point of illumination, except that the outlines of shadows are softened.

The lighting from a single fluorescent strip behaves somewhat like a multiple light source, but the shadows which it creates are soft at the edges.



If you place your subject close enough to a living room lamp, you can capture shots like this one with fast film.

/



When travelling in dimly lit tunnels, it is difficult to take pictures of automobiles, for the exposure would have to be too long to be steady. If you expose for the highlights, you get an interesting pattern of headlights and overhead lamps.



Fluorescent lighting casts a more even over-all illumination, but it also burns out its immediate surroundings when exposure reading is for shadow detail in the figures.



Fluorescent lighting in the home is ideal for informal portraits of children, because it casts a soft, over-all illumination that eliminates deep shadows.

When lights are distributed throughout a room or office or industrial interior, they may create either a shadowless situation or a crisscrossing of shadows, depending upon the number of separate lights, their placement, and their directional character. If fluorescents are intermittently spaced across a ceiling, or if they are placed around the edges of a ceiling, as is done quite commonly, they will create a shadowless illumination.

If, in an ordinary room in a private home, you were to have an ordinary ceiling light and a single floor lamp, the effect might be as though you had two competing spheres of influence which might or might not overlap. An analogy might be drawn to the widening circles in a pond caused by throwing pebbles. If the resulting circles are widely separated, they might not appear to reach each other; if they are closer together, they interact with some little commotion. Similarly, the separate lights in a room might have no effect on each other or they might add to each other's effects, depending upon how powerful they are and how far apart they are spaced.

Spotlighting

Spotlighting is usually associated with night clubs, the stage, and certain outdoor events. While spotlights are also used in portraiture, we are not concerned with that use because it is supplementary for the purpose of achieving a special effect.

Spotlights throw a brilliant, harsh beam of light which creates equally intense and hard shadows. If you take a picture of an actor directly in the path of the spotlight, the effect is very much like brilliant, frontal flash illumination, with the flash mounted at the camera. When you are off to the side, you can see the sharp outlining of features.

If the subject has dark hair and you are photographing it at an angle against a dark background, the features will come out prominently, but the hair will tend to blend into the darkness. If the backdrop is light and the subject is close enough

to it, you may get a sharp shadow portrait on the backdrop. In a night club, the lighting is sometimes directed downward, casting a somewhat different shadow pattern.

Exposure treatment will vary with the intensity of the spotlight. To take a reading, you would need a narrow-angle photometer. If colored discs are used with the spotlight, exposure will vary correspondingly.

SOME TYPICAL AVAILABLE-LIGHT PROBLEMS

Window Lighting

Subjects photographed near a window often come out with one side of the face properly exposed and the other side in deep shadow. This happens when one side of the face is toward the window and the other side toward the interior of the room. Then, if the camera is pointed toward the full face or at an angle toward the window, it will catch the deep shadow.

One way out of this situation is for the photographer to get as close as possible to the window with his back to it and the camera pointing toward the subject from the window. The lighting effect, except for direct rays of sunlight, will then be somewhat like a diffused flash, for it will trail on out toward the interior of the room. The subject's face, however, will be adequately illuminated.

Another technique is to have someone hold a large reflecting surface so that some of the light coming from the window is bounced off toward the dark side of the face. This could be a large sheet of newspaper, a white sheet, or a piece of cardboard on which has been pasted crumpled aluminum foil.

Porch lighting works out in much the same way, but the contrasts are not quite as extreme. The picture-taking arrangements will depend upon the height of the open-screened areas and the number of open sides to the porch, as well as upon how light or dark the interior of the porch is finished.

Kitchens

The kitchen is a natural for picture-taking because so much of the family activity takes place there. With its light-colored walls and the brilliance of its overhead illumination, pictures are easily taken with short exposures. Fluorescent lights are more brilliant and frequently make possible shorter exposures than incandescent lamps, even with the same exposure reading. To fill in shadows, one method is to place the subject near a light wall which will then reflect enough light for the purpose. Another technique is to use a reflector as described in the preceding section.

Office and Industrial Lighting

The brilliant illumination in modern buildings — usually fluorescent — offers maximum flexibility in taking pictures. Because of the shadowless lighting, you can move around quite freely to achieve the best picture composition. The super-sensitive film lets you stop action with faster shutter speeds, but if this is not important, you can sometimes do quite well with films of moderate speed and even relatively slow speed.

At the office, you can accumulate quite an album of your associates at their desks or in conferences. In a big variety store, you can have a real field day with a wealth of subject matter. Inside a factory, machinery and equipment may be uniformly illuminated from some angles, but not from others. The same is true of people at work on this equipment. With fill-in flash, properly controlled, you can eliminate the shadows while retaining the naturalness of available-light. Proceed generally as with fill-in flash in the outdoors; for close-in pictures, one or two thicknesses of handkerchief may be necessary when using flash.

Street Lighting

Pictures taken by the light coming from store windows present many of the same problems as pictures taken indoors by



This shot of a railroad station waiting room at night combines overhead tungsten light, window light and point light sources as subject matter in the picture. Na'turally, contrast is extreme.

the light coming in through windows. Unless you have your back to the store window, so that you face the subject, part of it will be well-illuminated while part will fade off into deep darkness.

Pictures taken under a street lamp create the effect of a single-point light source overhead, with deep shadows under the eyes, under the nose, under the chin, depending on the position. Quite dramatic effects are possible during a snow, fog, or rain.

Under a theatre marquee, the overhead lighting is more evenly distributed, so with the additional lighting from the theatre front, this affords a good opportunity for modeling of the face and figure. The photographer should have his back toward the theatre front unless he uses supplementary flash to fill in the non-illuminated face and figure of the subject.

When taking pictures of signs, buildings, and outdoor displays which are adorned with neon lights, expose for the important object, leaving the lights to take care of themselves.

Store Window Interiors

Displays inside store windows frequently make very interesting photographs. Watch out for window reflections from other store fronts, and from moving vehicles. Remember that what you see as you look at the window may not be what the camera sees because it has a slightly different point of view. The safest thing is to study the image on the ground glass for any of the possible reflections that might be evident there. Polarizing screens will eliminate reflections on glass, provided the camera is at about a 30° angle with the window. A tripod will be necessary because of the exposure loss due to the filtering of the light by the polarizing screen.

Striking pictures can be taken of store window interiors using color film. During the day, however, you would have a mixture of the tungsten illumination inside the store window and daylight illumination outside, as well as partly inside. Since



Pictures of store windows often combine daylight with lighting inside the windows. Since these lights are placed to display the merchandise to best advantage, they offer valuable tips on light placement to the studios photographer.

you cannot mix lighting sources with color film on the same frame, you should restrict its use with this type of subject to night shots.

EXPOSURE AND DEVELOPMENT

Under difficult conditions, where getting a picture is more important than getting fine grain, you may stretch the film rating and make up for the underexposure by forced development. Remember, however, that "pushing" during film development will not give you any image if none was recorded in the first place. Consequently, underexposure and overdevelopment yields contrasty pictures and poor shadow details.

Many photographers prefer to force the rating of a film like Kodak Plus-X Pan rather than to use Kodak Tri-X Pan which does not have quite as fine a grain pattern.

The fastest films tend to be rather flat in their tonal contrast. They require longer periods of development in order to build up adequate tonal contrasts. So-called "vigorous" developers are used for this purpose. Sometimes, however, a softer working developer is used to offset the harshness of very contrasty lighting.



When you see a colorful scene like this, you don't need anyone to tell you that you've got a good shot in front of you.

9

Suggestions For Picture Subjects

In the material which follows, a number of general suggestions for picture-taking are included for the benefit of those who are relatively new to photography. In addition, I have included a number of suggestions for treatment of specific types of picture-taking subjects.

Your objective is to take a picture which carries an interesting message or which portrays your subject in an interesting or gratifying manner. In this section, we will cover five general principles which contribute to these aims, as follows:

1. Simplify your materials.
2. Compose for the film.
3. Focus selectively.
4. Use contrasting tones and arrangements.
5. Find new viewpoints.

Simplify Your Material

Limit your picture to a single subject or theme. Don't try to crowd too much into the picture or you will produce nothing better than confusion.

This does not mean that you are limited to one object in the picture. A single theme or idea can be suggested by a number of closely related details. Thus, several people engaged in some mutual activity would constitute a single subject. On the other hand, two or more different kinds of activities going on simultaneously would introduce competing centers of interest.

When you do have more than one center of interest, move in closer to the subject of coverage. Take two or three people engaged in conversation or play. Move in even closer to capture the animated behavior of only one person.

When I urge that you concentrate on a single subject or theme, I do not mean that all details should be excluded. Frequently, you are able to do this in ordinary commercial photography, but in real life you often must take situations as they are. The important thing is to find a viewpoint or a field of coverage which does not include conflicting details which would compete with the main center of interest.

Compose for the Film

For the occasional big enlargements of selected sections, which you might desire, it is good practice for you to record the desired subject as large as possible in the first instance. Then, your image details will be rendered as sharp as the film will permit.

One reason that pictures taken close up have such dramatic impact is that they are a welcome change from the abundance of pictures which tend to be taken from too great a distance from their subjects.

Ordinarily, you will take close-ups by moving as close as convenient to the subject. You will also try to use small lens apertures by selecting slower shutter speeds.



If you've got an interesting and colorful subject, fill the frame with him and forget about surroundings and background. If you can't have the subject perform any action, you can keep the picture from seeming posed by having him look away from the camera.

As you do get physically closer, you must avoid *foreshortening*. Thus, if two hands are photographed with one a little closer to the camera than the other, the one will come out much bigger. If you do not have room in which to back away, you should either find a shooting position from which both hands will be at about the same distance, or you should change the position of the hands. The same principle is applicable to other parts of the body and to other large objects which are photographed in depth.

Of course, this applies also to independent objects. Their independence may sometimes permit you to use foreshortening to advantage. This is done, for example, when you want to keynote a picture by a prominent object which assumes unusually large proportions in the foreground.

Focus Selectively

Selective focusing is used in order to give prominence to particular objects or parts of objects in the picture area. To achieve this, you "manipulate" the depth of field (or zone of sharpness). A common usage for this is in portraiture, where you might want to throw a background out of focus or where you might even want to have the front features, including the eyes, in sharp focus with a softening away of some of the other features further away from the camera lens.

One means of controlling the point of sharpest focus selectively is to move closer to the object because then you will have a narrower depth of field. Another method is to move the lens in or out slightly. As you do so, while watching the ground glass, you will notice that the point of sharpest focus will move forward or backward as you adjust the lens.

Once you have found the point of sharpest focus, you will note, especially at close distances, that objects in front of and behind the critical point will grow progressively softer, even to the point of "vaporizing" out. With this technique, then, you can concentrate attention where you want it.



When your camera is focused for scenics, you get great depth of field, which is enhanced, in this case, by the direction of the stagecoach's movement, and by the fairly apparent lines leading along the road back to the house in the distance.

Use Contrasting Tones and Arrangements

The purpose of pictorial contrast is to set objects off from each other as well as from their backgrounds. The most common means of achieving depth, as a form of contrast, is through light and shade. The deepest or sharpest shadow effects are achieved when the lighting is far off to the side. This brings out surface textures because of the minute shadow pattern, whether in the texture of fabrics, building surfaces, sand, snow, and skin, among others.

Overhead lighting is a kind of side-lighting, when considered in relation to the camera axis. Older people will have the lines in their faces accentuated by overhead lighting, while with front lighting, such as is produced by flash, the lines are filled in, thereby accentuating youth rather than age.

Contrast is also achieved by the arrangement of color and tonal masses, as well as by the juxtaposition of subject-matter mass. A light object against a dark background or a light fabric against darker fabrics will provide contrast. Physical contrasts are also suggested when austerity or severity is offset by softness or roundness and vice versa, as, for example, when a rectangular or angular mass is complemented by an object having round or graceful lines.

Find New Viewpoints

Strive for a feeling of something different. Get away from a common waist-level or eye-level picture. If you lower your shooting level down to the knees, the foreground will loom up larger than the background. This will bring pictures of people into sharper relief. A bathing beauty on the beach, for example, will then be seen in greater prominence against the sky.

Similarly, a lower shooting angle will enable you to get rid of undesirable background objects like automobiles, houses, or trees. By lowering the camera and tilting it upward slightly, you can take portraits in the outdoors with the clear sky as



What might have been an ordinary photo is turned into an arresting one by shooting down from an overhead position. The diners and the tables thus form an exciting pattern.



A double portrait taken from an unusual angle. Attention is riveted on the girl since she is so strongly framed by the horse's head and chest, and is then directed to the horse by her fixed look at him. Back of horse was enlarged enormously by foreshortening, so the print was cropped accordingly.



Three fishermen getting ready to cast in the surf for their morning sport. Picture is enhanced by the placement of their bodies and of their rods, which help to frame them.

your background. If the clouds are just right, you can slip a yellow filter over the lens.

When photographing familiar scenes, get away from the typical look of a "record" shot. Look for a new viewpoint, whether it be higher, lower, or off to the side. Take pictures of people doing things a bit differently or unconventionally but, please, not embarrassingly.

IDEAS FOR PICTURES

Following is a sampling of the many different kinds of situations in which interesting pictures can be made.

Monuments and Buildings

When taking pictures of monuments and buildings, the different angle should be the thing to find — the angle which produces a picture different in some respect from what you ordinarily would get on a picture postcard. Perhaps you could find some interesting detail of which you wish to take a close-up.

Find an angle that gives you the most dramatic effect in relation to both the direction of the sun and the configurations of clouds in the sky. A good time for picture-taking is mid-morning or mid-afternoon, when you can get side-lighting. Flat lighting on a building will not bring out its surface texture adequately. When photographing a monument, walk around it until you get the best combination of light and shade with the most interesting background. Try crouching low as well as holding the camera high. If you must take pictures of people in front of statues and buildings, have them do something other than to look into the camera stiffly.

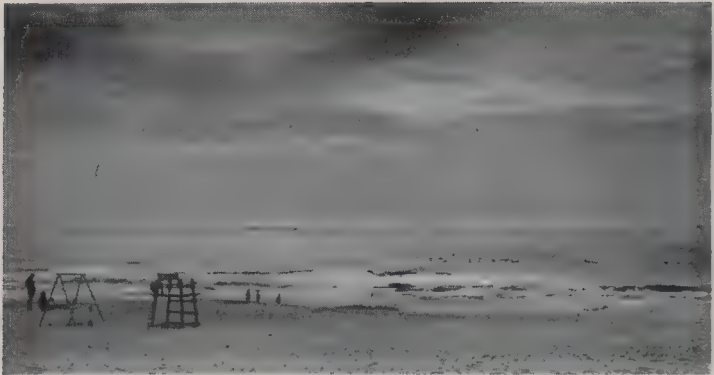
Landscapes

The texture of landscapes will be brought out more clearly if photographed when the sun is at an angle to your line of picture-taking. This could be from early to mid-morning and from mid- to late afternoon. This is especially important in



Take your Kodak Automatic 35 or Motomatic 35 with you on your travels. If you keep it poised, you can take pictures of subjects like this one, which are often just around the next turn in the road.

1



A dramatic sky, an active sea, and cropping that gives a wide-angle effect combine to make this a stirring photo. The foreground figures and objects help fill the scene and give it depth.

order to bring out trees, rock formations and land outlines. To darken the sky and bring out the clouds as well as to eliminate haze in the distant scene, with black-and-white films, use a yellow, orange, or green filter. With color film, you need a UV or a haze filter. A warming filter will also help penetrate haze, but the scene must be appropriate to use such a filter.

Stories in Pictures

In a series of pictures, each should convey the heart of the action for that particular stage of the sequence. Do not make extensive exposures of the same subject in the same pose. Of course, this does not mean that you should not shoot an abundance of pictures if you want to have the greatest basis of selection, especially in professional photography. Rather, it means that if you are going to shoot abundantly, you should at least do so with slight variations, for these may often make the critical difference.

In your final selections, continuity is desirable. It is achieved by not skipping over any of the steps in the natural sequence of events. Good transition is achieved by carrying over something from the preceding picture.

A "secret" of a good picture story, if you can call it a secret, is to plan ahead. Try to anticipate all of the events and their probable sequences. Try, also, to anticipate the unlikely things which might occur, even though not called for in the "script," so that you can be prepared for them. Experience in working with particular situations will, eventually, put you in a state of readiness for almost anything that might happen.

Action Pictures

In taking pictures of moving objects or of sports events, it is not always necessary to freeze the action so that there is no visible evidence of movement. We have long since passed be-



When shooting action pictures, it is a good idea to wait for a peak of action, when motion is almost suspended, but when a full sense of motion is still apparent.



When fast movement crosses your camera, it is difficult to stop completely. Panning the camera in the direction of movement helps (note blurriness of houses in background) but still doesn't stop fastest action, movement of horse's legs.

yond that stage in the growth of photography when the freezing of action was an accomplishment in itself. Now, for some subjects, certain kinds of blurred movement add to realistic portrayal. For its part, however, the blur conveys the mood of action by reference to a background which should come out sharp and clear. For example, assume that you are taking a picture of a golfer swinging at the ball. His moving arms and stick can show up as a blur, provided that the rest of the picture is sharply rendered.

In the actual stopping of action, there are two things to keep in mind. One is that action is most easily arrested on the film if the action is going directly toward or away from the camera. The other is that action is most easily recorded at its peak.

When a person walks across your line of view, his image displaces much more rapidly than if he were walking toward or away from you. Hence, the stopping of action in your line of view can be done with comparatively slow shutter speeds, as slow as $1/25$ or $1/30$ in many cases. A person walking diagonally across your view can be stopped at $1/50$ or $1/60$, while a walk across the face of the camera calls for a shutter speed of $1/250$. These are minimum requirements in each case. Whenever possible, you should use a much faster shutter speed.

In certain kinds of fast action, there is a moment when all movement stops. When a child is being pushed on a swing, it stops momentarily in mid-air just before it begins its return trip. At such a peak moment of arrested movement, you can get by with the slowest hand-held shutter speed of about $1/25$ or $1/30$. The same kind of action-stopping can be accomplished with many other kinds of reciprocating movement. For example, in photographing a basketball game, there is a moment when the player, jumping toward the basket, rests in mid-air before he begins his descent. The simplest example of this suspension of movement can be observed in throwing a ball up into the air and noticing how it hovers for a split moment before its descent.

Informal Portraits

Informal portraits are the special province of the amateur. For portraits, you do not need the controlled background and lighting of the portrait studio. The aim of the informal portrait is to catch the unposed expression which brings out the character of the subject.

One of your problems is to prevent your subject from freezing up in front of the camera. If he makes up for his embarrassment by clowning, your problem is a little easier because at least he is in a state of action and movement. In fact, one technique should be avoided because it freezes the subject. It is far better to engage him in conversation, perhaps telling him that you are just making practice shots. Pretend to fumble with your equipment, if you prefer, or in some other way try to distract your subject from his frozen pose.

The truly informal portrait shows the subject in some natural setting or background incident to his work or to his favorite mode of play or relaxation. When you pose your subject in such surroundings, he has something to hold onto. That is, he is not entirely surrounded by props which are artificial to his normal environment.

The more formal portrait requires background control. A dull-finished wall may do very nicely. Inexpensive yard goods can be hung up as a background. To emphasize or subdue the background, with artificial light, move the subject toward or away from it. A light thrown on the background from the side will lighten it. As explained in the chapter on flash, pulling the subject away from the background will darken it because the exposure is based on the distance of the subject itself from the lamp source.

Backgrounds indoors and outdoors can be subdued by opening the lens wider to throw the backgrounds out of focus.

The best lighting for portraiture outdoors is soft, hazy sunlight. Brilliant sunlight produces harsh shadows which can be softened through the use of a reflector board. Another technique

is to use fill-in flash. Here, one or two thicknesses of handkerchief will soften the flash.

Babies and Children

The unexpected and the unposed pictures of babies and children are often the best ones. Around the house, it's often a good idea to have a camera all set up and ready to use. Catching the baby's attention may require ingenuity and originality, depending upon its personality. Use an animal, a toy, a clapping of the hands, or any other distraction, to catch the baby's momentary attention.

To chart the baby's progress through its stages of growth, have a regular program of taking pictures at predetermined, key stages, as well as on unexpected special occasions. You will cherish the picture of the baby with jam all over its face as much as, or even more than, the spic-and-span pose.

When children are photographed regularly, they become accustomed to the camera and soon learn to ignore it. Then, it is easy to picture the children in the backgrounds of their play. Record their varied interests, games, and activities. Take advantage of their natural curiosity for introducing interesting diversions. They'll soon get so wrapped up in them that they'll become oblivious of your photographic antics.

Animals and Pets

Your own domestic pets should be fairly easy subjects for pictures. If you know the animal's habits, how it behaves under different stimuli and what attracts its attention, you can create your own picture-taking opportunities. As a common example, most cats will rise on their legs and claw after a ball of yarn or other suspended object.

A good camera-shooting angle is important with small animals. If you shoot from above the animal, there'll be too much floor and not enough animal. Try crouching down to the level of the animal itself.



A laughing child and a sleepy dog caught in the shade of an open porch show how easy it is for the snapshooter to "shoot from the hip" and capture moments that just won't wait for precise camera adjustments.



Candid shots of children are usually hard to capture, since they require the photographer to be ready at a moment's notice, but they are usually worth it when you get a shot of a winsome miss like his.



When animals are fenced in, you can take shots like this one by putting your camera lens through a fence, a screen or bars. Be sure, though, the animal is not wild and that you are not endangering yourself.



A large shaggy dog at rest is made more animated by taking his picture with its mouth open, as if it is talking. Riders in background, rendered sharp by depth of field, seem to be studying the same thing the dog is.

INDEX

- Action, 68, 115-118
- Acutance, 79
- Animals and pets, 120
- Automatic camera procedures, 19-33
- Available light photography, 85-90
- Babies and children, 120
- Background control in flash photography, 67-68
- Black-and-white films, 77-81
- Black-and-white filters, 81-83
- Black-and-white photography, 77-83
- Close-up adjustment, 37
- Color film filters, 72-73
- Color films, 70-71
- Color photography, 73-76
- Composition, 104-106
- Contrasts in picture subjects, 108
- Distance setting, 30-32
- Electronic flash, 55-56, 68
- Existing light photography, 85-90
- Exposure, 39-54, 73-76, 83
- Exposure, flash, 55-68
- Film, black-and-white, 77
- Film, color, 70-71
- Film loading and unloading, 19-27
- Film speed, 40
- Film speed setting, 27-29
- Filters, black-and-white, 81-83
- Filters, color, 72-73
- Flash, electronic, 55-56, 68
- Flash equipment, 55-62
- Flash exposure, 63-68
- Flash guide numbers, 62
- Flash photography, 55-68
- Flower pictures, 75-76
- Focusing, 30-32, 106
- Guide numbers, flash, 62
- Holding camera, 35-37
- Ideas for pictures, 103-120
- Inaccessible objects, exposure, 47
- Kitchen light, exposure by, 97
- Landscapes, exposure, 49, 112-114
- Light qualities in exposure, 40-41
- Light sources in indoor lighting, 90-96
- Loading and unloading film, 19-27
- Low-level light exposure, 87-88
- Low-level light indicator, 37-38

Monuments and buildings, 112
Neutral color filters, 73

Office and industrial lighting, 97

Parallax adjustment, 37

Picture subjects, 103

Portraits, informal, 75, 119

Portraits and specific objects,
exposure, 45-46

Rapid film advance, 32-33

Setting film speed, 27-29

Shutter and diaphragm relations,
50-54

Spot exposure readings, 45-46

Spotlighting, 95-96

Store window lighting, 99

Story pictures, 114

Street lighting, 97-99

Subject, exposure qualities, 41-44

Synchronization, flash, 55-62

Tips for picture subjects, 103-120

Window daylight, 88-89

Zone-minder, 30-31

Universal Photo Books

(\$1.95 each)

PHOTO DARKROOM GUIDE
AVAILABLE LIGHT PHOTOGRAPHY
THE AMATEUR'S 8mm MOVIE GUIDE
FLASH FOR BETTER PHOTOGRAPHY
MOUNTING, PROJECTING & STORING SLIDES
OFFICIAL 35mm CAMERA RATING GUIDE
GUIDE TO PERFECT EXPOSURE
8mm AND 16mm MOVIE EQUIPMENT RATING
GUIDE
COLOR PHOTOGRAPHY TECHNIQUES
SINGLE-LENS REFLEX PHOTOGRAPHY
BETTER ELECTRIC EYE MOVIES
FUJICA CAMERA GUIDE
IMPROVED 35mm TECHNIQUES
ARGUS 35mm PHOTOGRAPHY
HOW TO CAPTURE ACTION IN PHOTOGRAPHY
BETTER PHOTOGRAPHY FOR AMATEURS
MINOLTA-16 CAMERA GUIDE
TEENAGERS' GUIDE TO PHOTOGRAPHY
BABY AND CHILD PHOTOGRAPHY
PENTAX GUIDE
SPOT NEWS PHOTOGRAPHY
GETTING STARTED IN PHOTOGRAPHY
THE AGFA GUIDE
POLICE AND CRIME PHOTOGRAPHY
CREATIVE CAMERA TECHNIQUES
PHOTOGRAPHY THROUGH MONOCULARS,
BINOCULARS AND TELESCOPES
VOIGTLANDER BESSAMATIC GUIDE
NUDE, FIGURE AND GLAMOUR PHOTOGRAPHY
PHOTOGRAPHIC COMPOSITION
MAMIYA C2 CAMERA GUIDE
WEDDING AND PARTY PHOTOGRAPHY
HOME MOVIES IN SOUND
ELECTRIC EYE STILL CAMERA PHOTOGRAPHY
THE NUDE IN 101 MOODS
COMPLETE LIGHTING GUIDE
NATURE PHOTOGRAPHY
MAMIYA-16 CAMERA GUIDE
ANIMAL AND PET PHOTOGRAPHY
OLYMPUS CAMERA GUIDE
EXPERIMENTAL & TRICK PHOTOGRAPHY
YASHICA PENTAMATIC GUIDE
STILL LIFE AND TABLE TOP PHOTOGRAPHY
KODACHROME II FILM GUIDE
SLIDE, DUPLICATING, TITLING AND FILMSTRIPS
CAREERS IN PHOTOGRAPHY
KODAK AUTOMATIC CAMERA GUIDE
ZOOM LENS GUIDE
MANUAL OF DARKROOM PROCEDURES AND
TECHNIQUES

ABOUT THE AUTHOR

Joseph D. Cooper's by-line is a familiar one to photography fans. In addition to having written more than a dozen Universal Photo Books, he was author for several years of a monthly column on ultra-miniature techniques in *Modern Photography*. His varied career has also seen him a college professor, business executive and author of a number of books on business and management practices.

ABOUT THE BOOK

Writing in his usually lucid and clear-cut style, Joseph D. Cooper here turns his attention to the Kodak family of automatic cameras.

Each of the cameras is examined in turn—the Automatic 35, the Motomatic 35, the Retina Automatic III, and the Brownie Starmatic II. The reader is taught how they work from the time film is loaded into them through all sorts of picture-taking operations until film is rewound and unloaded.

Most important of all, the author shows you how to make best use of the built-in exposure meter. He outlines a variety of lighting conditions and shows you how the camera must be handled so that the meter sets the right exposure for that condition. Instructions are given for operating the camera manually, taking substitute exposures of inaccessible objects and taking readings from your own palm.

After making you master of your Kodak automatic camera's operations, the author gives a long series of instruction on film, lighting, picture-taking techniques, and much more—all designed to show you how to become an accomplished photographer with your Kodak Automatic camera.

UNIVERSAL PHOTO BOOKS • New York 10, N. Y.